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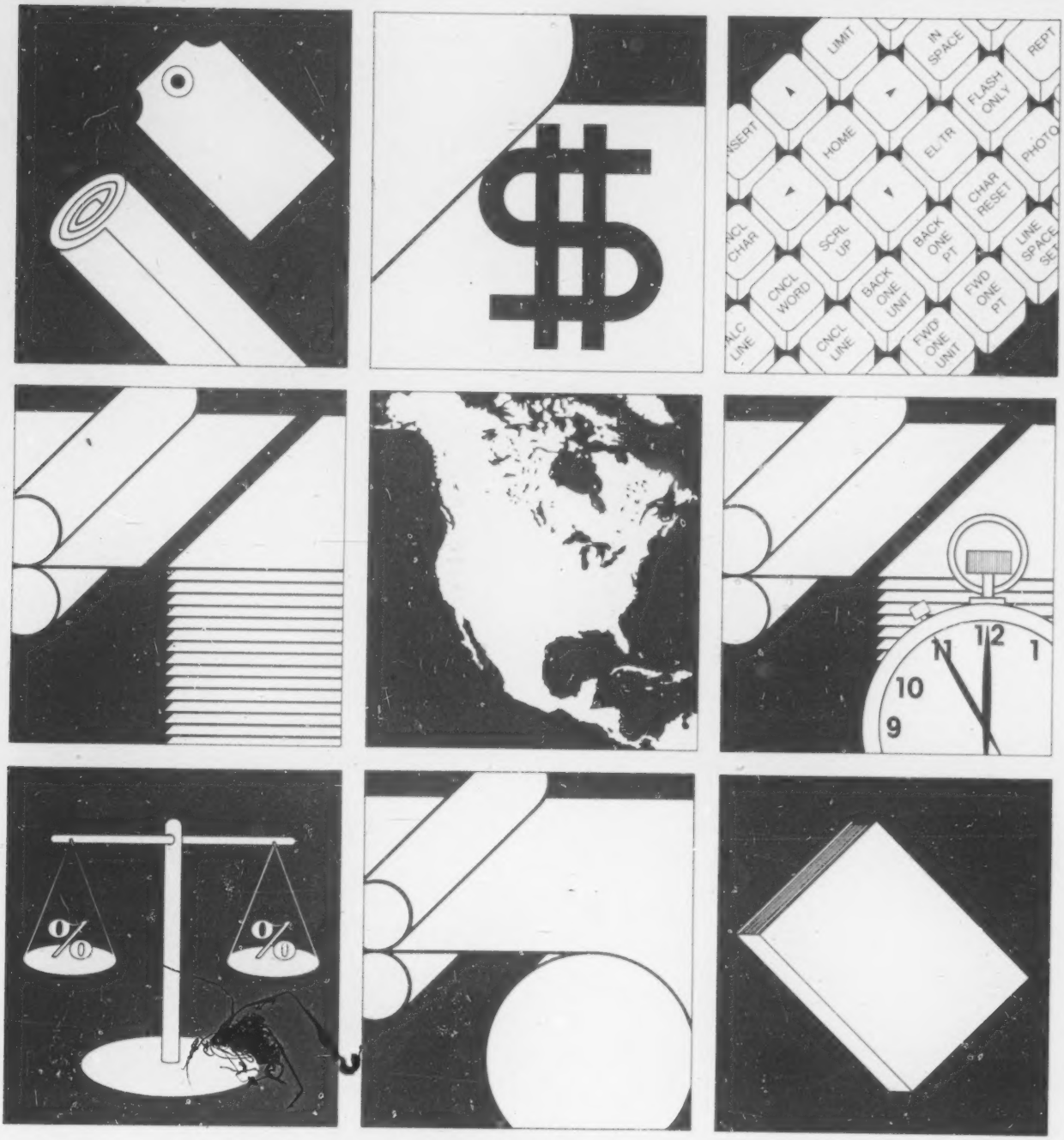
Printing Industries of America, Inc.

1984 Financial Ratios



Volume I
Management Guide to the PIA Ratios

ABOUT PIA . . .

Printing Industries of America, Inc., is a federation of national, regional, state, and city associations composed of over 12,000 graphic arts firms. PIA and its affiliated associations comprise the largest trade association in the world dedicated to serving the interests of the graphic arts community. Membership in one of PIA's Affiliated Associations automatically entitles an organization PIA membership.

PIA's Financial Services offers the following products and services:

- PrintFinance: PIA in conjunction with Merrill Lynch brings you an innovative, comprehensive financial package called PrintFinance, available only from PIA Financial Services. PrintFinance is a unique competitively priced financial service package developed especially for the printing industry and allied graphic arts firms.
- The Annual PIA Financial Ratio Study - A Multinational Financial Survey
- Money Manager - A Monthly Financial newsletter with an exclusive print activity forecast: PrintOutlook
- Reprints of "Economics and Financial Management" articles from issues of PIA Management News
- Financial Management/Microcomputer Seminars

For further information, contact:

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PIA's Education and Publication Group is active in financial management, offering numerous publications on the subject:

- Best & Worst Markets for Printers in the 1980s (a unique marketing and financial planning aid, available by subscription directly from PIA)
- Cost Accounting for the Job Order Printer
- Graphic Arts Estimating, Volume I
- Money Making Guide to Printing Estimating, revised edition
- Running in the Black: Six Steps to Managing Printing Profitability
- Sales Compensation in the Printing Industry - 1983
- Simplified Cost System
- Tax Planning for Your Graphic Arts Business
- Understanding Value Added
- Value Added Financial Management: A Guide for Printers
- 1981-82 Production Management Compensation Survey
- 1983 Survey of Sales Management: Practices and Compensation
- 1984 Executive Compensation Report

These books are available through PIA Affiliated Associations' Graphic Arts Bookstores. For further information, contact:

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61st annual ratio study compiled from the operating statements and balance sheets submitted by representative members of the printing industry and computed by RGS Enterprises, Inc., 1 Carlisle Drive, Arnold, Maryland 21012.

1984

MANAGEMENT GUIDE TO THE PIA RATIO STUDIES

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PRINTING INDUSTRIES OF AMERICA, INC.

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Dear Colleague:

1984 is the 61st year in which Printing Industries of America, Inc. has collected and published detailed financial ratio information for members of the graphic arts community. The data presented each year provide a detailed and comprehensive picture of the financial status of the major segments of the U.S. and Canadian graphic arts industries. In addition, it allows individual firms to compare their annual performance with that of many other similar firms, including those which earn well above-average profits. Ratio results are published annually. They are summarized as follows:

- Management Guide to the PIA Ratios
- All Printers by Sales Volume
- All Printers by Product Specialty
- All Printers by Geographic Area
- Sheetfed Printers by Size and Geographic Area
- Web Offset Printers — Heatset
- Web Offset Printers — Non-Heatset
- Combination Offset — Sheetfed/Web
- Book Manufacturers' Ratios
- Large Printers' Ratios
- Typographers' Ratios
- Preparatory Specialists' Ratios
- Binders' Ratios
- Quick Printers

For a more complete composite picture of your company's performance relative to the U.S. and Canadian printing industry, several books could be used in your analysis, such as one of the overview volumes, e.g., *All Printers by Sales Volume*, and one that addresses your particular business segment or production process, e.g., *Book Manufacturers or Web Offset — Heatset*, respectively. Alternatively, such analysis is facilitated by participating in the Ratio Study each year and ordering an individual company computer printout which compares a participant's ratios to those of companies which are similar in size and sales volume, produce the same products, and use the same manufacturing process.

Please refer your questions on the PIA Ratio Study to your nearest local PIA affiliated association or to me at the address above.

William A. Rose, II
Director, PIA Financial Services

Dear Member of the Graphic Arts Community:

The annual PIA Financial Ratio Study is the most comprehensive financial survey available on the health of the graphic arts industry. To help you effectively use the study, it is our pleasure to present to you this management guide.

The guide is basically divided into three sections. General information about how to use the ratios is included in the first section. The second section includes step-by-step procedures to analyze the financial statements and important relationships inherent to the study. Meaningful financial topics relative to the graphic arts field supplement the guide and comprise the third section.

We strongly believe in the importance of sharing this type of information among members of the graphic arts community and are proud to have played a role in compiling the 1984 PIA Financial Ratio Study.

H.R. Margolis Company
Certified Public Accountants
Bala Cynwyd, Pennsylvania

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Writer acknowledgements are in order to the following members of H. R. Margolis Company:

Harris R. Margolis, CPA — Judith R. Trimble, CPA
Barbara S. Pines, CPA — Timothy W. Duerr, CPA
Marc E. Sullivan, CPA — Stuart W. Margolis, CPA
Anthony S. Janulewicz, CPA

Special acknowledgement to Judith R. Trimble, the coordinator of this book.

SECTION 1 - HOW TO USE THE RATIOS

I. STATISTICAL INFORMATION -- HOW THE NUMBERS ARE COMPUTED

The PIA Ratios are computed according to a method of relative or common size. With this method each company's dollars are converted into a percentage of total dollars for all companies. Then these percentages are totaled and divided by the number of firms in the same category. This method avoids what is known as self-weighting, a common pitfall when dealing with various magnitudes, by giving each company equal weight regardless of its size.

The following example illustrates how this method of calculation eliminates the problem of the ratios giving inordinate weight to the results of very large firms.

			% of Sales	
Firm	Sales	Factory Payroll	Firm's Ratio Factory Payroll	PIA Ratio Factory Payroll
A	$ 200,000	$ 60,000	30.0%	
B	500,000	100,000	20.0	
C	8,000,000	975,000	12.2	
			62.2% divided by 3 = 20.7%	

II. ALL FIRMS

The term "All Firms" has two distinct meanings in the PIA Ratio Studies. Sometimes it refers to all printing firms participating in the studies; at other times it applies to participating firms in a given category -- for example, the sales class from $500,000 to $1,500,000.

III. PROFIT LEADERS

Why 8%?

The term "Profit Leaders" is used to describe those firms that earned 8% or more income before taxes as a percentage of sales. One may ask, why 8% - why not 6% or 10%? Nobody knows why 8% has become the standard with which to distinguish Profit Leaders. However, over the years, that figure has proven to be a satisfactory measurement. Each year, about 25% of participating firms achieve the distinction of Profit Leader, thus constituting an upper quartile of all participating firms. Historically, the average percentage of pretax profits attained by Profit Leaders is 12%. Therefore, it may be safe to assume that the relevant range of profitability of Profit Leaders is from 8% to 16% of sales, with the average Profit Leader actually achieving pretax profits of 12% rather than 8%.

	1980	1981	1982	1983	1984
Percentage of All Firms that are Profit Leaders	26.9%	27.1%	25.2%	18.2%	20.4%
Profit Leaders Income Before Taxes	11.85%	11.88%	12.15%	12.08%	11.90%

Source: PIA Ratio Studies

IV. WHY NOT ROI AS A MEASUREMENT?

PIA Ratios have shown that those printing firms earning 8% or greater pretax profits generate a healthy Return On Investment (ROI). The average ROI of Profit Leaders in recent years has been 17%. Indeed, ROI is one of the most comprehensive measures of profitability. So much so that many printers would like to see it as a criterion for determining Profit Leaders. Since ratios should be at a level that produces the optimum ROI over a period of time, changing the measure of profitability may have reasonable cause in the future. However, since most of the printing industry relates profit to sales instead of investment, and supporting data indicates that firms with pretax profits of 8% or greater have sound investment turnovers, there appears to be no reason to change the measure of profitability at the present time.

Printing managers should pay close attention to ROI and heed the suggestions offered in the section on ROI later in this book.

The ultimate objective of the printing manager in using financial comparative analysis, such as is presented in the PIA Ratio Studies, is to obtain qualitative information about the printing industry. He can then make good economic decisions for his business, and increase his printing company's profits. Generally, a printing manager wants to know.....

Are my expenses too high in relation to my sales?
Do I have too little or too much inventory in stock?
Am I producing enough Value-Added Sales?
Can we meet our debts as they mature?
Are our customers receivables being collected rapidly?
Should we increase our selling prices?
How Can We Increase Our Profits??

The PIA Ratio Studies have historically provided insights for answering these and other questions, but only when used effectively. The effective use of the Ratio Studies is the subject of this management guide.

PURPOSE

Year after year, the PIA Ratio studies have proven that companies with vastly different sales volumes and that fall into many different categories can attain profits. Guiding you to higher profits is the primary purpose of the annual PIA Ratio Studies. Throughout the studies, there is relevant financial information designed specifically for your graphic arts firm. The key is knowing how to use these studies effectively. There are three basic steps in using the Ratios: set-up, comparison, and analysis. Each of these is discussed below.

I. SET-UP -- CHART YOUR ACCOUNTS

Initially, make sure your financial statements are set up in a format similar to the PIA Ratio Statements. These statements are geared to the printing industry and so putting your own statements into a similar form should be no problem for you. Once this is done, you will be better prepared to compare your financial results with those of similar firms and will be able to extract significant information for the profitable control of your company. The printing firm uses various accounts in recording its day to day transactions.

A customized Chart of Accounts is your blueprint for producing meaningful financial statements. It provides the basic framework for collecting and recording financial data. Keep in mind, though, that every printing firm will have exceptions and requirements unique to its own operations. For example, one printer may have in-house bindery operations; another company may use an outside company for bindery services. To a certain extent, their accounts would differ. Nevertheless, you will find that the majority of account classifications presented here apply to your company as well.

Organize Raw Data

The first step in charting your accounts is to organize your raw financial data into groupings according to the lines of responsibility in your company's organizational chart. Frequently, the proper preliminary planning in organizing a Chart of Accounts is missing. When this happens, the result is an operating statement similar to the one in Example 1. The only relevant information supplied to this company's management is the profit number. Consequently, management is likely to find that not only is pinpointing problem areas difficult but also that there is no way to evaluate the company's operations. The reason is that accounts are not based on the organizational structure of the company; nor are factory, selling and administrative expenses segregated. In short, the company in Example 1 lacks a useful basic framework because detailed information is missing from its major accounts.

EXAMPLE 1 - HOW NOT TO CHART ACCOUNTS

SALES		$5,420,000
EXPENSES		
Wages	$1,788,600	
Materials	1,242,800	
Other Materials	732,200	
Factory Expense and Maintenance	277,900	
Utilities, Electric	21,300	
Delivery	59,000	
Travel	48,200	
Advertising	26,100	
Telephone	26,600	
Insurance	30,900	
Office Expense	139,800	
Bad Debts	21,700	
Heat	38,300	
Employee Benefits	142,500	
Miscellaneous Expense	72,600	
Commissions	149,000	
Sales Discounts	39,400	
Depreciation	166,400	
Rent	124,200	
Taxes	153,900	5,301,400
OTHER INCOME		118,600
Discounts Taken	92,300	
Other Income	45,500	137,800
PROFIT BEFORE INCOME TAXES		$ 256,400

Every company's financial system should be controlled through a Chart of Accounts. Furthermore, each account should be broken down so that it provides for the collection of as much information as is necessary, paying close attention to as many details as is possible. Generally, businesses use similar account structures in recording their transactions, listing their assets owned (cash, etc.), debts owed, income received (sales), and expenses. Specific accounts, though, are inherent in a particular industry -- in this case, printing. The PIA Standard Classification of Accounts is an excellent guide to use to begin customizing your own Chart of Accounts. For example, a well-designed Chart of Accounts separates a printer's Material Costs into paper, ink, film, plates, other chargeable materials and outside services. These accounts are common to most printing firms. Outside Services is further detailed into art, composition, offset preparation, printing services, bindery and other. Here, customization takes effect according to the printer's final product (see Example 2). Using this system, if any problem areas in Material Costs are imminent, they will be quickly detected.

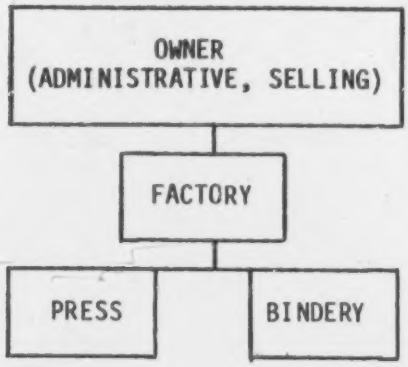
EXAMPLE 2 - HOW TO CHART ACCOUNTS

MATERIAL COSTS		
Paper		$XXX
Ink		XXX
Film		XXX
Plates		XXX
Other Chargeable Materials		XXX
Outside Services		
Art	$XXX	
Composition	XXX	
Offset Preparation	XXX	
Printing Services	XXX	
Bindery	XXX	
Other	XXX	XXX
TOTAL MATERIAL COSTS		$XXX

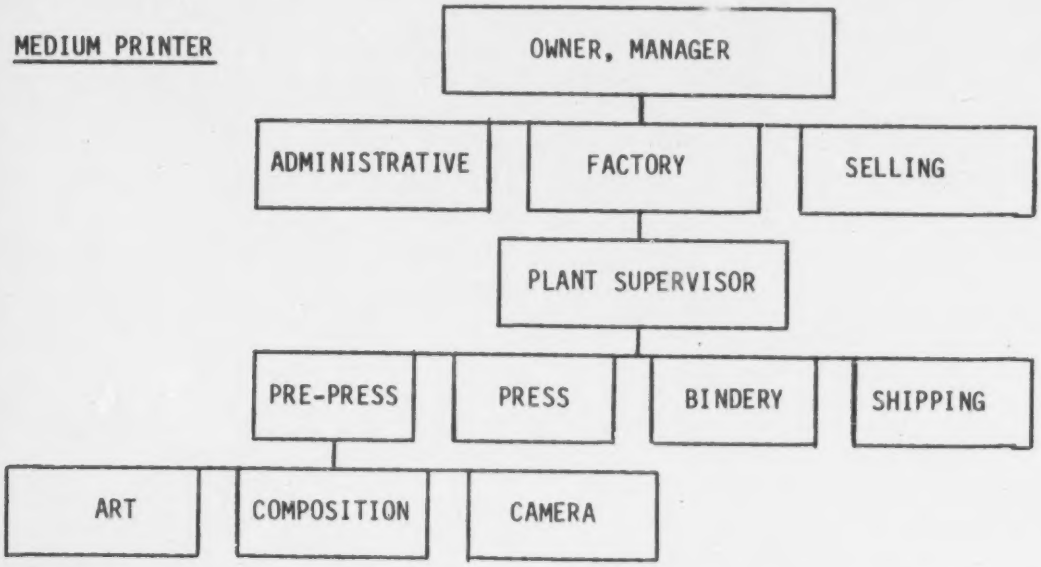
To reiterate, your Chart of Accounts should be based upon your organizational structure. If one does not exist, identify the major functions, departments and cost centers. Your organizational chart may be simple or complex depending on the size of your company, the products it produces and the processes involved. List your company's functions and/or departments and diagram them as has been done in the charts in Example 3. You may first want to make a flowchart of how items are processed through your present system.

EXAMPLE 3 - ORGANIZATIONAL CHARTS

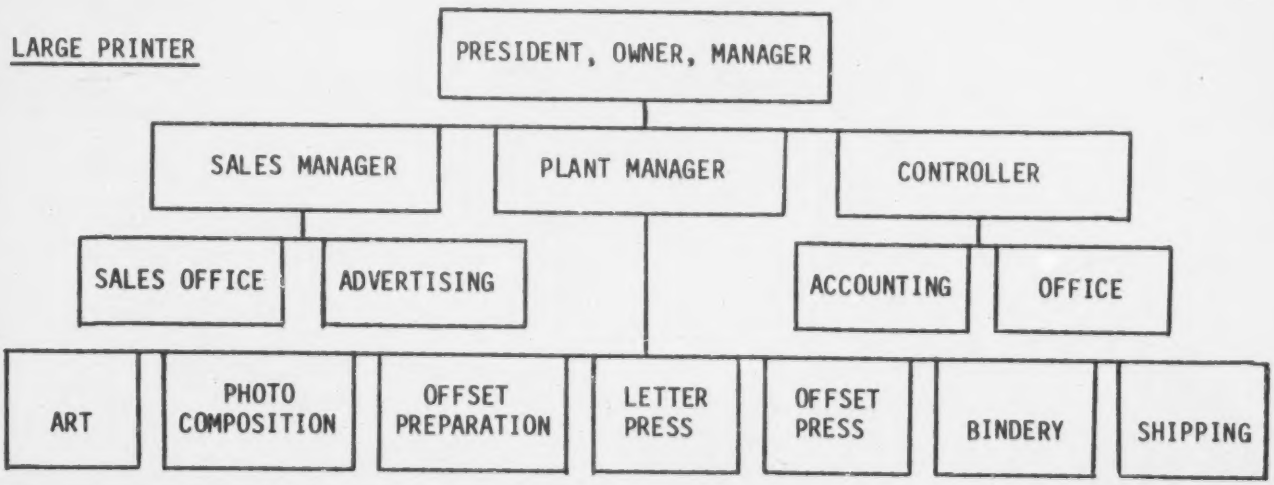
SMALL PRINTER



MEDIUM PRINTER



LARGE PRINTER



Identify Functions

Next, identify the income and expense items associated with each department. It is necessary to know each kind of revenue and each kind of expense incurred according to a cost center. Let us assume that you are a medium-size printer. According to the organizational structure illustrated here, the medium printer has administrative, selling and factory departments. The factory department is segregated into cost centers identified as pre-press, press, bindery and shipping. The pre-press cost center is further broken down into art, composition and camera cost centers.

Segregate Duties

You are now ready to chart your accounts. Let us concentrate on one expense -- PAYROLL. From your payroll records, identify each employee's job function. Then organize the functions appropriately (based on the organizational chart) into factory employees, administrative employees and selling employees. Also, organize the payroll-related expenses (payroll taxes and employee benefits) accordingly.

Allocating factory payroll is not really difficult, but it does take more planning because the bulk of your employees work in this department. Furthermore, this is where your work is accomplished. As an example, we will assume that from your payroll records we have identified 15 employees working in the factory. Their job functions (positions) are as follows:

JOB POSITIONS OF FACTORY WAGE-EARNERS

1. Plant Supervisor
2. Shipping Clerk
3. Truck Driver
4. Artist
5. General Helper
6. Pressman
7. Pressman's Apprentice
8. Proofreader
9. Compugraphic Operator
10. Stripper
11. Pressman
12. Cutter
13. Folder
14. Hand Binder
15. Cameraman

Now, match up each job with the corresponding cost center from the organizational chart. We know that general helpers are used in almost every cost center. To allocate their payroll expenses accordingly would be a wasteful effort. Cost-benefit analysis comes into play here. Their work cannot be directly chargeable to a certain job; therefore, their payroll expenses should not be classified as a direct labor function. The same principle holds true for the shipping clerk and the truck driver. These employees should be classified as indirect labor since they are responsible for general factory duties. (The PIA Standard Classification of Accounts itemizes these wages as General Factory Salaries and Wages and Packing, Shipping and Delivery Wages.)

How To Chart The Accounts

Referring to the PIA Standard Classification of Accounts, we will now chart your Factory Payroll accounts based on information obtained through organizing your raw data, identifying functions, and segregating duties. This is the result:

EXECUTIVE SALARIES.....	Plant Supervisor
INDIRECT WAGES.....	Shipping Clerk
.....	Truck Driver
.....	General Helper
DIRECT WAGES	
PRE-PRESS	
ART.....	Artist
COMPOSITION.....	Compugraphic Operator
	Proofreader
CAMERA.....	Stripper
	Cameraman
PRESS.....	Pressman
.....	Pressman's Apprentice
BINDERY.....	Cutter
	Folder
	Hand Binder

Combining departmental wages for your Statement of Income would result in the following:

FACTORY PAYROLL	
Executive Salaries	$XXX
Direct Wages	XXX
General Factory Wages	XXX
Packing, Shipping and Delivery Wages	XXX
Payroll Taxes	XXX
Employee Benefits	XXX
TOTAL FACTORY PAYROLL	$XXX

This illustration has concentrated on Factory Payroll only. Other expenses and revenues should be identified, segregated and charted according to relevant cost centers in the organizational chart. The result will be an organized Chart of Accounts from which you can draw information for meaningful financial statements.

Better Pricing, Costing And Control

Going a step further, the refinement of your Chart of Accounts will supply necessary data for other purposes as well. For example, a detailed Chart of Accounts can help you make more accurate hourly cost rate computations. This, in turn, will lead to better pricing and costing. Your Chart of Accounts puts at your fingertips valuable information for managing your budgeting and forecasting, and for successfully controlling your printing company's operations.

II. COMPARE

In order for you to compare your financial statements (derived from a well-designed chart of accounts) with the PIA Ratio Standards, there must be a common denominator that allows you to pinpoint potential strengths and weaknesses in your drive to boost profits. If you convert your dollars into percentages, you will have that common denominator. The results will be percentile statements called "common size" statements. Dollar amounts are different for each firm; "common size" statements are comparable because every company's base is the same - 100 per cent of sales, value added, or total assets.

Now, you are ready to compare your company's percentages with a target range -- the PIA PROFIT LEADERS. Outside services costs of $331,600 may be good, bad or indifferent, but outside services costing 8 percent of sales suddenly becomes meaningful when compared to a target range (see Example 4).

EXAMPLE 4 - REPORT ON OPERATIONS

	YOUR COMPANY		PIA HIGH PROFIT STANDARDS	DIFFERENCE
	DOLLARS	"COMMON SIZE" OR % OF SALES	"COMMON SIZE" OR % OF SALES	MORE (LESS)
SALES OR VALUE OF PRODUCT PRODUCED	$4,000,000	100.00%	100.00%	-
FACTORY COST OF PRODUCT				
MATERIAL				
Paper	926,800	23.17	23.26	(0.09)%
Other chargeable materials	218,400	5.46	5.54	(0.08)
Outside services	331,600	8.29	6.79	1.50
TOTAL MATERIAL	1,476,800	36.92	35.59	1.33
FACTORY PAYROLL	1,075,200	26.88	24.81	2.07
FACTORY EXPENSE	511,200	12.78	11.81	0.97
TOTAL FACTORY COST OF PRODUCT	3,063,200	76.58	72.21	4.37
GROSS PROFIT	936,800	23.42	27.79	(4.37)
ADMINISTRATIVE AND SELLING EXPENSES				
Administrative expenses	404,400	10.11	8.92	1.19
Selling expenses	328,000	8.20	6.92	1.28
TOTAL ADMINISTRATIVE AND SELLING EXPENSES	732,400	18.31	15.84	2.47
INCOME BEFORE INTEREST EXPENSE	204,400	5.11	11.95	(6.84)
Interest expense	79,600	1.99	1.35	0.64
OPERATING INCOME	124,800	3.12	10.60	(7.48)
Other income	28,000	0.70	1.30	(0.60)
INCOME BEFORE INCOME TAXES	$ 152,800	3.82%	11.90%	(8.08)%

Pick Your Category(ies) For Comparison

Within the Ratios, you may compare your "common size" statements or percentages with all firms in a particular category or with the target range of firms earning 8% or more before taxes (Profit Leaders). Keep in mind the common rule that in any comparative analysis there may be other relevant facts that may sway the balance. The Ratio Books suggest what these other relevant facts may be so you can refine your analysis. Your percentages may be compared to other similar companies in a number of different ways, as is illustrated below.

BY SALES VOLUME - Ratios and statistics are presented in six categories:

Sales to $250,000
$250,000 - $500,000
$500,000 - $1,500,000
$1,500,000 - $5,000,000
$5,000,000 - $10,000,000
Sales over $10,000,000*

* A separate PIA Ratio Book LARGE PRINTING FIRMS' RATIOS breaks down this sales category as follows:

$10-20 million
$20-40 million
$40-80 million
Sales over $80 million (if applicable)

BY PRODUCT SPECIALTY - Companies producing similar products usually confront similar problems. Companies with over 50% of their sales volume in key market areas are presented in the following categories:

Commercial and Advertising
Magazine and Periodical
Newspaper
Packaging
Financial
Direct Mail - Catalog
Directory
Label
Book
Typographers
Binders
Preparatory Specialists
Quick Printers

BY PROCESS - Comparisons of firms using the following predominant process provide significant information:

Sheetfed Offset
Web-Fed Offset - Heatset
Web-Fed Offset - Non Heatset
Combination Sheetfed and Web-Fed Offset

BY GEOGRAPHIC AREA - Significant comparisons can be made of companies in the same economic environment. The Ratio Studies break down geographic regions as:

New England and Upstate New York
Metropolitan New York and New Jersey
Eastern Pennsylvania, Maryland and D.C.
Southeast Atlantic
East North Central
South Central
Chicago Area
West North Central
Plains and Mountain States
Pacific Southwest
Pacific Northwest
Canada

Identify which of the aforementioned categories reflect your company's operations and compare your results with theirs. You will then be ready for the next and most important step in meaningfully using the ratios: ANALYSIS. Analysis will help you identify any problem areas in your company as well as point out profitable areas that you will probably want to maintain.

III. ANALYSIS

One reason for analyzing the financial picture of your printing business is to determine its overall position in the printing industry. However, that is not the only reason. Comparing your company with others in the industry enables you to determine which aspects of that position to maintain and which to improve in order to achieve your profit objective. Comparative financial analysis should be broad, so it is important to evaluate all of the ratios together, not individually. Moreover, your financial analysis should incorporate an examination of ratios over a period of time and include a comparison of results with trends in the printing industry.

Evaluate Ratios Collectively, Not Individually

While individual ratio results may reflect the health of one particular aspect of your printing company, looking at one ratio alone may not provide you with truly significant financial information. Each ratio should be viewed in light of other ratios and facts concerning your company. For example, increases in depreciation expense and interest expense percentages from the income statement may, at first glance, alarm the printing manager. An analysis of the balance sheet, however, may show that such alarm is unwarranted. Top management may have long range profit planning goals effected by plant expansion (increase in assets) funded through attractive debt-financing (increase in liabilities). A slow, outdated press may have been replaced by a new, more efficient one. Consequently, deeper analysis into the income statement may reveal that the company's income tax rate was lowered by investment tax credits and accelerated depreciation on the new press. Therefore, do not take one ratio out of context. Make your analysis broad enough to encompass all of your financial results.

Observe, Assess, Monitor

Observing your ratios on a continuing basis will produce a number of meaningful trends. Assessing the results may encourage the printing manager to take corrective action. Finally, monitoring ratios over a period of time helps see if the action taken was, in fact, appropriate.

Trend Analysis

As mentioned previously, examining printing industry ratios over a period of time can be useful in analyzing your firm's strengths and weaknesses. However, it is also possible that if one of your company's ratios is way "out of line", there may be nothing you can do to improve it. The whole printing industry may be experiencing a slump in that particular area. Furthermore, if it so happens that industry trends are showing improvement, any action on your part may be countereffective. For example, when paper costs soared nationwide, a hasty decision by the printing manager to lower inventories may have proven disastrous because shortly thereafter the supply of paper became scarce. Inadequate inventory would have disrupted production resulting in lost accounts, soaring operating expenses, and even more reduced profits.

Remember, historical trends provide clues and should be observed in lieu of other facts. Also, other factors may cause trends on an upward direction to reverse at anytime.

Assess The Printing Industry

Comparative financial relationships between your printing firm and the PIA standards provide crucial facts for sizing up your company's performance. Detailed information on effectively using the PIA Ratio Studies' results follow this section. This information is designed to furnish feedback to printing management so that management can investigate areas in most need of attention.

SECTION 2 - ANALYSIS OF THE RATIOS

Think back to the last time you were faced with this paradox: Sales are the same or even higher than they were last period, but profit is down. Clearly, this signals a grave concern. It means that something is wrong. In all probability, that something has to do with your company's Value Added, or inside sales. All too often, however, management is not familiar with the concept of Value Added and fails to recognize it as the root of the problem.

VALUE ADDED DEFINED

Value Added is a technical term for sales of a company's own manufacture. It is calculated as sales less materials costs and outside purchases.

SALES		$100
LESS: MATERIALS		
Paper	$22	
Other chargeable materials	6	
Outside services	7	35
VALUE ADDED		$ 65

VALUE ADDED MAXIMIZES PROFIT

By neglecting Value Added, printing firms pass over a valuable accounting procedure for maximizing profits. Of course, there can be reasons other than inattention to Value Added for a company's poor operating performance. However, time and time again, poor operating performance stems from failure to heed this one basic principle of accounting: Profit is achieved from sales of a company's own manufacture.

UNDERSTANDING VALUE ADDED

Once you understand that Value Added is the residual of sales less material costs, you realize that this value provided by your own manufacture is all you have available to pay your remaining expenses. These are:

- Factory labor
- Factory expenses
- Administrative expenses
- Selling expenses
- Interest

Then, what is left is a profit. This is different from the basic "cost sheet concept" that we are accustomed to in the printing industry. Since, generally, within a relevant range of operations, these expenses behave as fixed costs, the "overhead" represented by these expenses will remain practically constant. Therefore, you want to maximize your value added.

Let us illustrate this with the following example, in which we are increasing the Value Added derived from $1,000,000 of sales from $635,600 to $675,000 to see the effect on operating income. We will assume that "overhead" (factory labor, other factory, administrative, selling and interest expenses) will remain the same.

The assumption that these expenses will not increase is being taken with some license; actually they would increase, but very little. We are taking this liberty to prove the point that, within this relevant range, these expenses behave in a fixed manner. Furthermore, full-service printing is a highly fixed cost operation. This helps to understand the effect of Value Added on printing profits.

	Original	After Increase in Value Added
SALES	$1,000,000	
Material Costs	364,400	
VALUE ADDED	635,600	$675,000
"Overhead"	591,000	591,000
Operating Income	$ 44,600	$ 84,000

THE BETTER STATEMENT

Statements of operations are more meaningful when prepared on the basis of Value Added, as shown below. In this type of presentation management starts its financial analysis with Value Added instead of with sales volume. Too often, printers tend to look to sales as the sole criterion of profit when, in fact, Value Added is always the better indicator. For example, consider these two possible results of a printing operation for a given month:

	Result A	Result B
SALES	$125,000	$ 90,000
MATERIALS	60,000	15,000
VALUE ADDED	$ 65,000	$ 75,000

This example shows that sales of $125,000 per month that produce $65,000 of Value Added are not as good as sales of $90,000 that provide $75,000 of Value Added. The latter yields $10,000 more with which to cover overhead. Clearly, the sales figures in the statement are misleading and the Value Added figures provide a truer picture of the company's activity.

By eliminating the distortion that material costs introduce into the conventional operating statement, Value Added gives you a truer picture of your operations.

For example, if we were comparing the statement of operations of a short-run sheetfed company with that of a web-offset firm, and our comparison was related to percentages based on sales, we could have significant differences in ratios. The reason: the significant differences in material costs. It would appear that the web-offset operation had a lower factory labor cost because a substantial amount of the sale was materials. But, in truth, the factory labor cost could be more or less than in its counterpart sheetfed operation as it relates to the Value Added produced by this labor.

Almost every company's product mix is different and, by using statements of operations based on Value Added, this product mix difference is eliminated. In conclusion, the Statement of Operations -- Value Added is a better statement with which to evaluate your operations.

MEANINGFUL MARK-UPS FOR COST

Understanding the Value Added concept permits focusing on the mark-up of materials for recovery of its share of overhead. It is essential that materials be priced at their cost plus their proper share of the allocated overhead. As Value Added is so important, it is imperative that the overhead recovered by materials be correct. The trite 5, 10 or 15% mark-up of materials (so-called handling charges) may or may not be correct. You should determine as a cost-center cost the correct overhead rate to be charged to materials. This is just as important as the correct press hourly rate.

Once this is done, you are looking at a cost sheet that contains materials with their share of overhead and cost-center costs. And now, you must apply the concept to profit mark-up. This will differ as the relationship of materials and manufacturing changes.

PROFIT MARK-UPS -- VALUE ADDED CONCEPT

Profit markups should take into account the Value Added concept; the higher the proportion of materials in a job, the higher should be the profit markup.

A sound profit markup policy is one which achieves and complements the business objectives of your firm. The point here is that printing firms should always seek to maximize their Value Added by attracting jobs with a high Value Added and by converting low Value Added jobs to higher ones. A general rule here is that the higher the Value Added, the more desirable the job and the lower the profit markup. Conversely, jobs with a small Value Added are less desirable and should receive a higher profit markup.

There is no neat mathematical formula to distinguish desirable jobs from less desirable ones. What is presented here is an overall philosophy which you can, with minimum effort, integrate into your own pricing procedures. For example, let's look at two jobs: one is a "good" job; the other is a "better" job.

GOOD JOB

Materials	$ 8,000
Cost center costs	2,000
TOTAL	$10,000

Before profit markup, the Value Added of this job is only $2,000. Now, price this job and include a profit.

Similarly, let's consider a better job:

BETTER JOB

Materials	$ 2,000
Cost center costs	8,000
TOTAL	$10,000

This second job has a Value Added of $8,000 before profit markup. Now, price this job with a profit markup.

If you followed the philosophy presented earlier, your prices should have included a higher profit markup for materials and cost centers in the good job and a lower profit markup in the better job. Why? Because the better job contributes more to overhead.

VALUE ADDED AND SALES COMPENSATION

One of the jobs of a good printing manager is to motivate the salesforce to improve its performance. However, while it is generally acknowledged that salespeople compensated on a commission basis are more effective than salaried salespeople, little attention is paid to the kinds of jobs that they bring in. Commissions are based on total sales dollars regardless of the Value Added component of the sale.

The inequities of this system quickly become apparent when sales compensation is examined in light of the Value Added concept. For example, what is there in such a system to motivate the salesforce to bring in "better", high Value Added jobs? Nothing. Where is the reward for the salesperson who does bring in the "better" sales? No where.

Sales commissions should be a percentage of Value Added. Basing sales compensation on Value Added is not an untried concept. Quite conversely, it is becoming an increasingly popular policy among printing firms and has already been adopted by some of the most successful firms in the industry. In this system, the percentage of Value Added in a job is equivalent to the commission a salesperson would receive on an average sale that involves an average amount of materials. Although at first glance it would appear that your salespeople's earnings would be reduced if their commissions were based on fewer Value Added dollars, this is not the case. In fact, compensation for those salespeople who previously were selling high Value Added jobs -- those with a significant amount of inside manufacture -- would increase. Commissions would only be reduced for those individuals selling large amounts of paper and other outside services.

The motivational factor that is built into this system is, of course, higher commissions for salespeople who bring in higher Value Added jobs. The justification is that it is these jobs that pay overhead and produce a profit, and therefore, contribute most to management's objectives.

HOW WELL AM I DOING? - ANALYSIS OF THE REPORT ON OPERATIONS

WHAT THE REPORT ON OPERATIONS OFFERS MANAGEMENT

Every manager has to pause occasionally, step back, and ask himself, "How well am I doing?" In order to answer this question, he needs information about his organization. The operating statement is an excellent source for such information. Financial statements, in general, are essentially historical documents. They tell what has happened during a particular year or series of years. The most valuable information to most managers concerns what probably will happen in the future; and by comparing, evaluating and analyzing the historical operating statement, the manager has more than just a crystal ball with which to try to predict the coming year.

The effective manager uses the operating statement as an important tool in the decision-making process. Once historical data is accumulated and analyzed, the manager can formulate and plan for the future, set objectives and attempt to control the outcome or those plans.

PIA Ratios are especially helpful in deciphering operating results. By comparing his company with other companies in the industry, the printer can more easily pinpoint problem areas. Since the Ratios are percentages, a more precise comparison can be made with other plants regardless of variations in dollar amounts. Even closer evaluations can be made by printers if they obtain special volumes i.e.; By Process, Sheetfed, Web-fed, Large Printers, etc.; or By Geographic Area or Product Line. The discussion in this Guide, however, will deal with the book, Sales by Sales Volume -- All Printers.

A WORD ABOUT RATIOS IN GENERAL

Ratios should be viewed as a starting point. By comparing a printing company with the PIA Ratio results, a printing manager can gain insight into trends and make intelligent judgments as to their significance. Variances in PIA Ratios and one's company indicate what costs and expenses should be examined in greater depth.

At the same time, one should keep in mind the peculiarities of his business, technological changes and economic factors which affect the results shown on the operating statements.

Perhaps, the best way to approach the analysis of the operating statement ratios is to make the comparison between the PIA Ratios and your company; then when variances occur between the objective and the achieved, ask the following questions:

- Why did the costs differ?
- Was the difference adverse or favorable?
- Who was responsible for the difference?
- What can be done about it?

SAMPLE ANALYSIS OF THE OPERATING STATEMENT

The report on operations for All Printers is set up by sales range as follows:

All Firms Reporting
Sales to $250,000
Sales from $250,000 to $500,000
Sales from $500,000 to $1,500,000
Sales from $1,500,000 to $5,000,000
Sales from $5,000,000 to $10,000,000
Sales Over $10,000,000.

For each sales range, ratios are provided for all firms participating in that range. Ratios are also provided for "Profit Leaders" or those firms achieving 8% or more profit on sales. This column -- Profit Leaders -- should be our objective and our comparison will be directed toward the Profit Leaders.

The separate line items on the Report on Operations will be defined as each one is discussed.

On page 32 is the sample PIA Ratio - Report on Operations and Supporting Schedules along with a fictional company "Printemps". The PIA Ratios used in our sample are for discussion purposes only and do not reflect this year's results. In doing your comparison, please refer to this year's PIA Ratio Study, All Printers by Sales Volume.

Printemps, our example company, is a medium-size sheetfed offset printer. Its sales are $2,700,000 for the current year. From the sample Ratio Study, we have abstracted the columns for the sales range $1,500,000 to $5,000,000 for our comparison. Our next step was to list the dollar amounts from Printemp's operating statement to coincide with the PIA chart of accounts. We were then ready to convert the Printemps dollar figures to percentages of sales so that we can compare, side by side, Printemps operating results with the Ratio Study results.

Each company should go through the exercise of comparing its percentages item-by-item with the Ratio Study results.

In our analysis, we will begin by defining what costs should be included in various line items on the operating statement. We will then compare our sample, Printemps, with the study results, and discuss any differences. Finally, we will attempt to pinpoint what could have caused the variance and suggest how the area could be improved in the future.

SAMPLE COMPARISON

Sales Or Value Of Product Produced

The starting point on the Report on Operations is sales. Sales are, of course, the value you place on your product. All the thrift-saving ideas about costs are insignificant if the printer does not price his product intelligently. You should know your costs. Printing is a made-to-order product. Every job is different and uses different facilities in your plant for various periods of time. In order to price your finished job, you must have a good system for gathering these costs and formulating a sales price that is competitive and profitable. Printemps' sales are $2,700,000. Further analysis will help evaluate how well the firm is pricing its product.

Manufacturing Costs - Material

Paper - For a printer, paper usually represents the largest single item of cost on the job. Printemps Ratios compare as follows:

PIA Profit Leaders	Printemps	Variance
21.95%	25.93%	(3.98%)

The variance is unfavorable and Printemps is using much more paper than PIA Profit Leaders. Some of the reasons this could occur are:

1. Purchasing policies at Printemps may need improvement.
2. Waste and spoilage may not be controlled properly. It is extremely important that paper be handled properly in all phases -- shipment, storage, pressroom, bindery, etc.
3. The type of paper used could also have an effect on paper costs as could product mix.

The effective manager will investigate these areas to find out where the problem or problems are occuring. Once this is done, corrective action can be taken to improve the situation.

Other Chargeable Materials

This line item on the operating statement has a supporting schedule (page 33) and includes the following:

	PIA Profit Leaders	Printemps	Variance
Ink	1.26%	1.39%	(0.13)%
Film	1.18	3.84	(2.66)
Plates	1.14	1.99	(0.85)
Other Chargeable Materials	1.19	0.09	1.10
	4.77%	7.31%	(2.54)%

Once again, our variance is unfavorable. Printemps may have a general problem with inventory control which could also affect the paper variance. If there is a perpetual system of inventory, is it working? Is there enough inventory on hand to prevent costs associated with rush orders? Another question could be whether or not the purchasing department is operating efficiently. Are prices compared periodically? Still another area for inspection would be the efficiency or inefficiency in handling materials. Are materials disappearing?

Especially high is Printemps variance from the PIA standard in film of 2.66%. Management explains this variance. Printemps has invested in a new scanner and is doing all of its own separations as well as some work for other area printers. This accounts for the Other Income which we will discuss later. Printemps also does predominantly high-quality color work which also accounts for the variance in film usage.

It may be good here to bring up the point that the ratios cannot be interpreted on an isolated basis. You must keep in mind your business and how it operates as you go through your evaluation.

Outside Services

Outside Services are those costs associated with work done on the outside for the printer. The chapter in this guide on Value Added gives a good explanation as to why it is beneficial for the printer to keep as much manufacturing in-house as possible. Printemps obviously sends a lot of its work out and could probably benefit from investigating the possibility of obtaining the necessary additional means to perform some of these manufacturing steps itself. Our Ratios compare as follows:

	PIA Profit Leaders	Printemps	Variance
Composition	0.91%	1.89%	(0.98)%
Offset Preparation	1.98	1.44	0.54
Printing	1.89	1.85	0.04
Binding	2.46	1.11	1.35
Other Outside Services	1.20	2.94	(1.74)
	8.44%	9.23%	(0.79)%

While Printemps fares well in Offset Preparation and Binding (since it does most of its own separations and binding), it still needs help with typesetting, an area which pulls its Composition costs way up. In order to improve production and costs, Printemps has already begun negotiating to purchase part of a local typesetting company. Such a move will certainly improve its Value Added position and should increase profits. Other Outside Services is an area which Printemps' managers should investigate. An analysis of where these costs are coming from may be beneficial in controlling costs and keeping the work in-house whenever possible.

Factory Payroll

Labor costs in graphic arts have been and continue to be a large percentage of sales. This is one area that can have drastic results on the bottom line of your operating statement. Even though you may feel trapped into accepting high labor costs, there are ways to make sure that you are getting as much benefit from the costs as possible. Let's take a look at Printemps' payroll section:

	PIA Profit Leaders	Printemps	Variance
Salaries-Executive	1.82%	2.78%	(0.96)%
Direct Wages	15.90	19.63	(3.73)
General Factory Wages and Salaries	2.56	0.89	1.67
Packing, Shipping and Delivery	0.83	-	0.83
Payroll Taxes	1.24	1.93	(0.69)
Employee Benefits	1.50	1.46	0.04
	23.85%	26.69%	(2.84)%

Allocation of factory wages between direct wages and general factory salaries is always difficult. When you prepare your numbers just remember that Direct Wages are earned by employees engaged in production and General Factory Salaries are for work not directly related to chargeable jobs. It may be more meaningful to analyze all factory wages combined to get the overall effect of how you compare with profit leaders in the industry.

Printemps spends 2.84% more for factory payroll than the PIA Profit Leaders. Going down the schedule, we see executive salaries are high; but we know Printemps is not a large company and the factory executive may well be one of the principals in the business.

Printemps major variance occurs in Direct Wages. It may be wise for the manager to sit down and review the following labor checklist for possible causes:

1. Do you know how to cost your labor contract? Have you anticipated costs involved and bargained intelligently?
2. Do you have a good system for gathering job costs so that jobs can be priced realistically?
3. Do you have an excessive amount of overtime and do you know at what point overtime is and is not profitable?
4. Do you schedule vacations for slack periods?
5. Do you try to avoid idle time? Do employees wait around because of:
   - poor instruction
   - no material
   - no power
   - no repairman
6. Are production operations delayed while you make decisions or, even worse, is one job removed from a press to get a "rush" job through causing extra make-ready time?
7. Do sales and manufacturing departments work together to determine which of the jobs to be completed has economical priority?

Because labor is so expensive, management has to watch it closely, and control costs tightly. Printemps is trying to do this by putting one of the owners of the business on the production floor. This will help keep the lines of comunication open between management and factory and should promote efficient operation of the plant.

Factory Expenses

On our Chart of Accounts, Factory Expenses are classified as Fixed and Other. Fixed Expenses remain relatively constant regardless of the level of productivity. Printemps total fixed expenses compare as follows:

	PIA Profit Leaders	Printemps	Variance
Total Fixed Expenses	6.49%	7.72%	(1.23)%

The largest variance in this classification occurs in:

Depreciation-Other	1.24% unfavorable
Insurance	1.41% unfavorable
Utilities	0.37% unfavorable

We know that Printemps recently purchased the scanner and this caused depreciation expense to increase. Insurance, however, is an area for investigation. Management should review its insurance coverage and determine if it is getting the best price available.

Printemps should also be concerned about its utility cost, and perhaps review its energy-saving plans. Are machines shut down when not in use? Is the plant heating system outdated and inefficient?

Other Factory Expenses are expenses which vary with the level of production. Control of these expenses is important to overall profit. Our sample company again needs improvement:

	PIA Profit Leaders	Printemps	Variance
Factory Supplies & Expense	1.68%	2.96%	(1.28)%
Packing, Shipping & Delivery	1.13	1.30	(0.17)
Repairs and Maintenance	1.12	1.85	(0.73)
Other Factory Expenses	0.62	0.38	0.24
	4.55%	6.49%	(1.94)%

Factory Supplies and Expense should be examined. Are supplies controlled and purchased effectively? The variance of 1.28% merits inspection. Repairs and Maintenance also is unfavorably over Profit Leaders by 0.73%. Perhaps, Printemps should review its preventative maintenance policies to see whether machines are breaking down due to neglect or age.

Gross Profit

We have now come to the Gross Profit line in our Report on Operations. This is a good time to stop in your analysis and look back at your manufacturing performance and results. Printemps gross profit percentage is 16.63% compared to the PIA Ratio Profit Leaders of 29.95%. In our analysis so far we have discussed where the significant variances appear to be and possible solutions for improving problem areas. Many times the most controllable costs are above the gross profit line; and if your firm is consistently below the industry leaders in the gross profit percentage, you must examine the problem areas closely and be prepared to tighten your belt. Our gross profit has to be high enough to cover administrative and selling expenses and the enormous interest expense many of us are paying today.

Administrative Expenses

Printemps has a small administrative staff. There is the president, who is the administrative executive; a bookkeeper; and a receptionist/secretary. The president keeps control of administrative costs and has favorably exceeded Profit Leaders in this area.

	PIA Profit Leaders	Printemps	Variance
Total Administrative Costs	9.66%	7.64%	2.02%

General areas for control in the Administrative section, among other things, are office supplies and expenses, postage, and telephone expense. These items can be watched for effective purchasing and usage.

Bad debts are another area where management can improve results by formulating good sound credit and collection policies and seeing that those policies are followed.

The greater portion of administrative costs is likely to be insensitive to fluctuation in either production or sales and hence uncontrollable in relation to volume. The manager should try to determine if the overall cost of administrative expense can be justified in terms of efficient operations.

Selling Expenses

Printemps Selling Expenses are also low compared to the PIA Profit Leaders.

	PIA Profit Leaders	Printemps	Variance
Total Selling Expenses	7.66%	6.00%	1.66%

This variance may not be as favorable as it appears. It may indicate that Printemps is not spending enough time and money to market its products and increase sales. There is one selling executive and one salesman. Obviously, the president of the company does some marketing, and while travel and entertainment is actually higher than the Profit Leaders by 0.14% (let the business pay for it syndrome) it is doubtful that Printemps is being as aggressive as it should in its selling efforts.

Interest Expense And Other Income

Printemps compares with the PIA Profit Leaders in this classification as follows:

	PIA Profit Leaders	Printemps	Variance
Interest Expense	1.22%	3.33%	(2.11)%
Other Income	1.06	1.30	0.24

Interest Expense is high for Printemps. Besides rather large long-term notes used to finance equipment, the company has been forced to seek short-term working capital demand notes at high interest rates. It would be wise for it to try to improve its cash flow so that these short-term notes could be kept to a minimum. Proper planning, efficient billing practices and collection procedures may help the flow of cash.

Other Income from separation work discussed earlier helps Printemps Income Before Income Taxes look better. For printers who do not have cash flow problems, it is wise to make sure that idle funds are effectively invested so that interest income can be realized.

The Bottom Line

This brief example has barely scratched the surface in the analysis of individual company operating results with the PIA Ratio Study. As variances are examined, it will be helpful to refer to other parts of the study. For example, in an analysis of Direct Wages, reference to Significant Facts tables will give the average wages in a particular sales range per employee.

Examination and analysis of the Balance Sheet and Return on Investment sections should also be integrated with the Operating Statement analysis in order to get the whole picture.

Once you have gone through the exercise of comparing your results with the industry standards for the current year and have isolated the differences from the historical data, it is time for you to plan and set objectives for the future. Proper understanding of the Ratio Study and diligent commitment on your part should result in improved operations. You already know how well you have done in the past year. The next question to tackle is, "How can I do better next year?"

REPORT ON OPERATIONS - SALES = 100%

	SALES FROM $1,500,000-$5,000,000			
	ALL FIRMS	PROFIT LEADERS	PRINTEMPS	
	%	%	$	%
SALES OR VALUE OF PRODUCT PRODUCED	100.00%	100.00%	$2,700,000	100.00%
FACTORY COST OF PRODUCT				
MATERIAL				
Paper	22.97	21.95	700,000	25.93
Other chargeable materials	5.39	4.77	197,500	7.31
Outside services	8.52	8.44	249,300	9.23
TOTAL MATERIAL	36.88	35.16	1,146,800	42.47
FACTORY PAYROLL	27.00	23.85	720,600	26.69
FACTORY EXPENSES	11.78	11.04	383,500	14.21
TOTAL FACTORY COST OF PRODUCT	75.66	70.05	2,250,900	83.37
GROSS PROFIT	24.34	29.95	449,100	16.63
ADMINISTRATIVE AND SELLING EXPENSES				
Administrative expenses	9.66	9.66	206,300	7.64
Selling expenses	8.62	7.66	162,000	6.00
TOTAL ADMINISTRATIVE AND SELLING EXPENSES	18.28	17.32	368,300	13.64
INCOME BEFORE INTEREST EXPENSE	6.06	12.63	80,800	2.99
Interest expense	2.15	1.22	90,000	3.33
OPERATING INCOME (LOSS)	3.91	11.41	(9,200)	(0.34)
Other income	0.76	1.06	35,000	1.30
INCOME BEFORE INCOME TAXES	4.67%	12.47%	$ 25,800	0.96%

SUPPORTING SCHEDULES - SALES = 100%

	ALL FIRMS %	PROFIT LEADERS %	PRINTEMPS $	PRINTEMPS %
OTHER CHARGEABLE MATERIALS				
Ink	1.47%	1.26%	$ 37,600	1.39%
Film	1.27	1.18	103,700	3.84
Plates	1.33	1.14	53,700	1.99
Other chargeable materials	1.32	1.19	2,500	0.09
TOTAL OTHER CHARGEABLE MATERIALS	5.39%	4.77%	$197,500	7.31%
OUTSIDE SERVICES				
Composition	1.04%	0.91%	$ 51,000	1.89%
Offset preparation	1.65	1.98	39,000	1.44
Printing	1.72	1.89	50,000	1.85
Binding	2.24	2.46	30,000	1.11
Other outside services	1.87	1.20	79,300	2.94
TOTAL OUTSIDE SERVICES	8.52%	8.44%	$249,300	9.23%
FACTORY PAYROLL				
Salaries - executive	1.81%	1.82%	$ 75,000	2.78%
Direct wages	17.96	15.90	530,000	19.63
General factory salaries and wages	2.86	2.56	24,000	0.89
Packing, shipping and delivery wages	0.92	0.83	-	-
Payroll taxes	1.58	1.24	52,000	1.93
Employee benefits	1.87	1.50	39,600	1.46
TOTAL FACTORY PAYROLL	27.00%	23.85%	$720,600	26.69%
FACTORY EXPENSES				
Fixed Expenses				
Depreciation - real estate	0.23%	0.21%	$ 10,000	0.36%
Depreciation - other	2.79	2.76	108,000	4.00
Taxes - real estate	0.19	0.17	5,000	0.19
Taxes - other	0.17	0.13	-	-
Insurance	0.49	0.48	51,000	1.89
Building rent	1.26	1.42	-	-
Utilities - heat, light, etc.	1.01	0.82	32,000	1.19
Equipment rental	0.56	0.50	2,500	0.09
Total Fixed Expenses	6.70	6.49	208,500	7.72
Other Expenses				
Factory supplies and expense	2.12	1.68	80,000	2.96
Packing, shipping and delivery expense	1.00	1.13	35,000	1.30
Repairs and maintenance	1.25	1.12	50,000	1.85
Other factory expenses	0.71	0.62	10,000	0.38
Total Other Expenses	5.08	4.55	175,000	6.49
TOTAL FACTORY EXPENSES	11.78%	11.04%	$383,500	14.21%

SUPPORTING SCHEDULES - SALES = 100%

	ALL FIRMS	PROFIT LEADERS	PRINTEMPS	
	%	%	$	%
ADMINISTRATIVE EXPENSES				
Salaries - executive	2.81%	2.98%	$ 80,000	2.96%
Salaries - office	2.51	2.53	40,000	1.48
Payroll taxes	0.32	0.30	7,000	0.26
Employee benefits	0.57	0.59	18,000	0.67
Bad debts	0.36	0.28	5,000	0.19
Office supplies and expenses	0.50	0.49	3,000	0.11
Professional fees	0.56	0.54	8,000	0.30
Taxes - business	0.19	0.23	300	0.01
Telephone	0.45	0.42	10,000	0.36
Other administrative expenses	1.39	1.30	35,000	1.30
TOTAL ADMINISTRATIVE EXPENSES	9.66%	9.66%	$206,300	7.64%
SELLING EXPENSES				
Salaries - executive	1.23%	1.17%	$ 50,000	1.85%
Salaries and commissions - salesmen	4.23	3.81	60,000	2.22
Salaries - sales office clerical	0.60	0.44	10,000	0.37
Payroll taxes	0.29	0.24	8,000	0.30
Employee benefits	0.31	0.29	6,000	0.22
Advertising	0.38	0.39	500	0.02
Travel and entertainment	0.93	0.79	25,000	0.93
Other selling expenses	0.65	0.53	2,500	0.09
TOTAL SELLING EXPENSES	8.62%	7.66%	$162,000	6.00%

THE BALANCE SHEET -- HOW WE STAND

The balance sheet (statement of financial position) exposes the financial backbone of a printing company. It is a snapshot of the printer's assets, liabilities and owners' equity at a particular point in time. The statement is called a balance sheet because its two sides must balance. Mathematically, the balance sheet equation is as follows:

Assets = Liabilities + Owners' Equity
OR
Assets - Liabilities = Owners' Equity

A printing company's assets are everything the company owns. Liabilities are everything the company owes. Owners' equity is the excess of assets over liabilities. It is the financial interest of the proprietor, partners or shareholder(s) -- whoever owns the company. Another term for proprietors', partners', or shareholders' equity is "net worth", a term not as widely used today as in the past.

A good printing manager must have an understanding of the components of a balance sheet and their relationship to company operations. An intelligent evaluation of the make-up of the balance sheet and its ratios reveals many factors about a company's operational capability.

Remember that particular ratios and relationships may differ depending on predominant processes used or products produced by the printer. For example, it is likely that a web-offset printer would have more capital-intensive assets and, correspondingly, more liabilities or equity to support those assets than a sheetfed printer because of the apparent economics of cost not available to the latter. By following the general analysis below, all printing managers should be able to customize and compare their own firm's results. We will focus on the balance sheet of the imaginary company, Printemps, as compared to the sample PIA ratio balance sheet on page 46.

ASSETS - THE PRINTER'S INVESTMENT

How many dollars in assets should we invest to produce X dollars in profit? This is not an easy question to solve. Our profitability measure of Return on Investment has been defined as income divided by assets. (This guide evaluates many facets of Return on Investment in a later section.) The mathematical equation of ROI is Income divided by Assets. To increase ROI, two options are available--either increase income or reduce assets.

$$ROI = \frac{Income}{Assets}$$

To Increase ROI: (1) Increase income
(2) Decrease assets

In this analysis of the balance sheet, we will concentrate on reducing assets or, more importantly, making sure our assets are being managed properly and efficiently to produce income.

Because printing is a highly capital-intensive industry, many types of assets are utilized. They are normally segregated into Current Assets, Fixed Assets, and Other Assets.

Current Assets	$XXX
Fixed Assets	XXX
Other Assets	XXX
Total Assets	$XXX

We will examine each type of asset as it relates to printing.

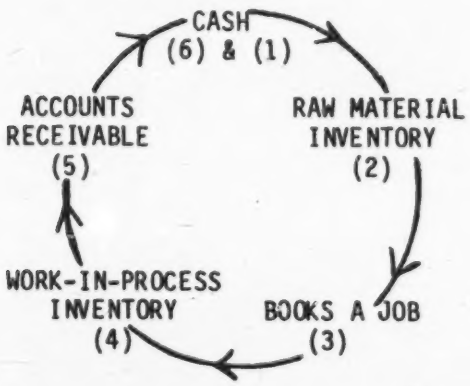
CURRENT ASSETS - THE PRINTER'S LIQUIDITY

Traditionally, current assets are listed on the balance sheet in the order of liquidity. They are often referred to as a company's liquid assets; i.e., assets that can be converted to cash quickly, usually within a period of a year. A printer uses these assets to pay his trade accounts payable or other liabilities due within a period of a year and, hopefully, has some left over at the end of the period.

Current assets follow a circular process during the year. They are used up and replaced on a continuous basis. For the average printer, this process will take place many times a year.

To analyze the printer's trading cycle, consider the following:

(1) A company starts with cash;
(2) next, it purchases raw materials -- paper, ink, film, etc.;
(3) then it books an order and;
(4) puts costs and materials into work-in-process.
(5) When the job is completed and shipped, the work-in-process inventory becomes an account receivable.
(6) Finally, the account receivable is converted back into cash and the cycle starts anew.



THE CLUE HERE IS TO HASTEN THE TRADING CYCLE FOR MORE PROFITS.

THE KEY IS TO MINIMIZE THE TIME INVOLVED IN THE CYCLE -- THE MORE CYCLES PER YEAR, THE MORE PROFIT GENERATED.

TURNOVER

Turnover is the time it takes to complete the trading cycle. Optimizing your turnover is in keeping with sound accounting principles, but appears to be in conflict with some printers' practices. Too often production, estimating, and sales personnel seek extra time to do a job--even though the faster the job is done, the better the turnover position. If management is to improve its profits, it must insist that the trading cycle be completed as quickly as possible.

Two ratios are critical in analyzing the movement or rapidity of the cycle. They are the inventory turnover and the collection period of receivables. It is imperative that printers understand how these two ratios operate and try diligently to improve them. Time after time, printing companies that have been sliding down the profit line have climbed back to a healthy position by improving their turnover. One printing company, for example, had been forced into heavy debt several years ago. In analyzing its operations, it was discovered that the collection period of receivables was approximately 48 days. After management installed tighter credit policies and monitored collection procedures more closely, it took only a short period of time to reduce the collection period to 36 days and eliminate a major portion of the debt.

Let us now analyze each current asset, generally, and then more specifically to see how Printemps' ratios compare to the industry as a whole.

CASH

The amount of cash a company should have on hand varies according to several factors. Having either too much or too little may both be problems, depending on the situation at hand. A profitable company will generate a surplus of cash after paying expenses. Conversely, a company in a loss situation will be pushed into using its cash to cover expenses. Similarly, a company in its growth stage will need more cash for investments and debt commitments and for building up sufficient inventories than will an established printing company. Historically, profit leaders generally maintain 11 percent of their total assets in cash. Your company may need more or less.

CASH CONTROL

Cash control is most important to a printer since almost every transaction will eventually result in either receiving or disbursing cash. Because cash is easily concealed and very liquid, it is more susceptible to theft or misappropriation than any other asset. It is incumbent on management, therefore, to maintain adequate control and accountability of its cash. Primarily, the printing manager must insure that the following procedures are being carried out:

1. Cash is recorded and deposited promptly after receipt.
2. All cash disbursements are made by check. (It is common for printers to have a petty cash fund for small expenditures that would be impractical to make by check. Just make sure the expenditures are small.)
3. Persons dealing with cash should have segregated duties. For example, the invoice preparer should not make bank deposits and the person writing checks should not reconcile the bank statements.

At first glance, when examining Printemps cash ratio, it may look as if the company has a cash deficiency because it has 5.60 percent less cash than the Profit Leaders. Yet, further analysis reveals that if both cash and receivables are totaled, the difference between Printemps and the Profit Leaders is only 1.00 percent. However, Printemps' cash as a percent of total assets may indicate a low receivable turnover and an inability to retain cash.

PERCENT OF TOTAL ASSETS

	Printemps	Profit Leaders	Difference
Cash	7.46%	13.06%	(5.60)%
Accounts Receivable	32.95	28.35	4.60
Total	40.41%	41.41%	1.00%

ACCOUNTS RECEIVABLE

Reason for concern may focus on the accounts receivable percentages. Remember, the balance sheet shows a company's financial picture at a particular point in time. Year after year, the PIA Ratios have shown that all firms, like Printemps, have a consistently higher ratio of receivables to total assets on their balance sheets than do Profit Leaders. A positive observation may be that the higher the sales, the larger the receivable balance. If sales were, in fact, increasing, there would be no cause for alarm, but, usually that is not the case. High receivable balances may not be bad, but should be investigated.

HOW FAST CASH IS COLLECTED

Let's delve further into accounts receivable ratios. The collection period of accounts receivable is an activity ratio indicating how effectively the company is collecting cash from its customers after sales are made. The sooner the printer collects the cash due, the sooner the money can be put to use -- to invest in more assets, to pay off liabilities, or to earn interest. As the collection period increases or decreases, it affects a company's cash, receivables, inventory, payables, and interest; generally it affects the whole company's operations.

The collection period is computed by dividing the average accounts receivable by the annual sales figure and then multiplying the result by 365 as follows:

$$\text{COLLECTION PERIOD OF RECEIVABLES} = \frac{\text{AVERAGE ACCOUNTS RECEIVABLE}}{\text{ANNUAL SALES}} \times 365$$

This ratio is indicative of credit and collection policies. Most printing firms have about one-sixth of their annual sales in accounts receivable. For example, if sales were $2,500,000, a typical firm would have $400,000 in accounts receivable. Reducing the collection period reduces the portion of assets in receivables and related interest costs.

PRINTEMPS COLLECTION PERIOD OF RECEIVABLES..... 66.82 days

PROFIT LEADERS..... 55.60 days

Printemps seemingly has bad collection procedures compared to the printing industry. A collection period of 66.82 days is much too long. All printers, including Profit Leaders, should heed a bit of advice taking all possible measures to shorten their collection periods to approximately 35 to 40 days. Some ways to do this are:

1. BILL CUSTOMERS DAILY, not at the end of the month, as many printers do.
2. Offer effective incentives for customers to pay on time.
3. Seek good, credit-worthy customers.

Usually, a small percentage of a company's accounts receivable will not be paid, thus becoming a bad debt. To show a better picture of receivables that will actually be collected, accounts receivable are shown on the balance sheet after an estimate of losses is deducted.

AVERAGE RECEIVABLES

The collection period ratio of receivables takes into consideration credit sales, but in printing, credit sales are almost synonymous with sales. Very rarely do printers (with the exception of the quick printer) have cash sales. "Average receivables" is the sum of beginning of the year receivables and end of the year accounts receivable balances divided by two:

$$\frac{\text{BEGINNING ACCOUNTS RECEIVABLE} + \text{ENDING ACCOUNTS RECEIVABLE}}{2}$$

A better average may be derived from using the beginning of the year balance plus the end of each month's balance divided by thirteen. The better the average, the more accurate the collection period computation.

INVENTORY

The printer's inventory is the sum of work-in-process, paper and other chargeable materials, and supplies. Because the majority of a printer's sales are specialized jobs produced "to order", finished goods inventory may be small or non-existent.

While inventory may at first glance appear simple and straightforward, inventory valuation methods vary among printers. The amount of a firm's inventory changes depending on the method used (FIFO, LIFO, etc). Management must decide which practice is best for them.

Printemps' inventory represents 13.08 percent of total assets, or 1.72 percent more than the Profit Leaders' inventory. Printemps may or may not be carrying excessive inventory in stock, but should either keep a perpetual inventory system or take a physical inventory monthly to properly control and safeguard its inventory. Printemps' manager should make sure there are sufficient funds with which to pay current liabilities and that too much cash is not tied up in inventory.

Earlier, it was mentioned that inventory turnover is a critical ratio in hastening the printer's trading cycle and, thereby, increasing profits. The equation is:

$$\frac{\text{COST OF MATERIALS SOLD}}{\text{AVERAGE INVENTORY}} = \text{INVENTORY TURNOVER}$$

Printemps	Profit Leaders
4.57	4.75

The cost of materials sold is taken from the income statement. Specifically, this includes paper and other chargeable material costs. Outside services, such as binding, are not included because they have no effect on inventory.

Some financial analysts will use sales rather than cost of materials in computing turnover. Since printers value inventories at cost, cost of materials sold gives a more accurate figure in calculating the ratio. Using the yearly average inventory is particularly important for printers because of the significant volume changes during the year.

A low inventory turnover indicates the possibility of a larger than necessary investment in inventory. A higher turnover implies better management and control. Printemps appears to be managing its inventory well.

If your inventory turnover seems out of line with PIA standards, examine your turnover by analyzing each facet of your inventory in depth.

WORK-IN-PROCESS TURNOVER

Work-in-process offers the greatest opportunity to improve inventory turnover. The faster a job is shipped out of the plant, the greater the profit potential and the more beneficial the effect on the company's capital position. The two results are as follows:

1. Less time is spent on a job.
2. Less cash is tied up in inventory.

The formula for the work-in-process turnover is:

$$\text{WORK-IN-PROCESS TURNOVER} = \frac{\text{COST OF PRODUCT PRODUCED (MATERIALS, LABOR, OVERHEAD)}}{\text{AVERAGE WORK-IN-PROCESS INVENTORY}}$$

Some printers have a fast turn-around from the time an order is put into production to its finished state. These firms will have less work-in-process. Other printers have a much longer production cycle because of the nature of their work and will have a significantly higher work-in-process inventory.

PAPER AND OTHER CHARGEABLE MATERIALS INVENTORY

Chargeable materials represent a substantial part of inventory. Printers are now required to carry more paper inventory than in the past. Inventory turnover improves when inventory levels are optimized and the storage time of materials (primarily paper) prior to production is reduced.

$$\frac{\text{PAPER USED}}{\text{AVERAGE PAPER INVENTORY}} = \text{PAPER INVENTORY TURNOVER}$$

$$\frac{\text{OTHER CHARGEABLE MATERIALS USED}}{\text{AVERAGE OTHER CHARGEABLE MATERIALS INVENTORY}} = \text{OTHER CHARGEABLE MATERIALS INVENTORY TURNOVER}$$

OTHER CURRENT ASSETS

Because the percentages are usually small, other current assets generally do not play a significant role in ratio analyses. Other current assets usually include various prepaid expense accounts; i.e., insurance, taxes, etc.

PROPERTY, PLANT AND EQUIPMENT

As mentioned earlier, printing companies are highly capital-intensive. New machinery costs are soaring; in many cases, used equipment is selling at prices approximating its original price tag. Therefore, their percentages usually comprise the major portion of all the assets. These assets are not for sale but are used in the operations of the printing process. Property, plant and equipment, with the exception of land, are depreciated over a period of time. The methods of depreciation vary; a printer usually uses one method of depreciation for tax purposes, and another method for financial reporting (book) purposes.

For book purposes, the printer may depreciate assets using the straight-line method over the estimated useful life of the asset. For tax purposes, printers may use the accelerated cost recovery system (ACRS) percentages to depreciate furniture, fixtures, machinery and equipment. The depreciation method decision for real estate should be carefully planned.

	Printemps	Profit Leaders
NET PROPERTY, PLANT AND EQUIPMENT	38.02%	33.79%

Printemps' property, plant and equipment percentage is higher than the Profit Leaders. These percentages may vary considerably among different types of printers and different circumstances. For example, it may be advantageous for one printer to own his plant, but for another printer living in a different geographic region, real estate costs may be outrageously expensive. Machinery and equipment percentages vary widely depending on the processes different printers use.

More important than the percentage of fixed assets owned, Printemps' manager should consider the following:

1. Is equipment being operated at capacity?
2. Is the company using outdated inefficient equipment?
3. Can extra space held for future expansion be temporarily leased?

OTHER ASSETS

Other assets may include deposits, the cash surrender value of officers' life insurance (preferably netted against loans payable to the insurance company), and goodwill. Printemps and the profit leaders ratios are almost identical. Generally, printers have no real problems with their "Other Assets".

LIABILITIES AND EQUITY

The liability and equity section of the balance sheet shows the distribution of each dollar of assets as follows:

LIABILITIES ($) ----------> OBLIGATIONS
EQUITY ($) ----------> OWNERSHIP

LIABILITIES - WHAT WE OWE

Liabilities are mainly broken down into current and long-term liabilities. We will first examine the printer's current liabilities and then discuss long-term liabilities.

CURRENT LIABILITIES

Current liabilities are obligations that usually fall due within a period of a year and will be paid by current assets. They include the obligations generated by the operating cycle, such as money owed to suppliers for the acquisition of material and supplies, collections billed in advance of delivery, salaries payable to employees, interest or principal payments due on notes, income taxes, and any other payable which is due in the next operating period.

	Printemps	Profit Leaders	Difference
Notes Payable	9.15%	4.35%	4.80%
Accounts Payable	14.34	11.31	3.03
Other Current Liabilities	10.19	11.18	(0.99)
	33.68%	26.84%	6.84%

After examining Printemps' ratios above in comparison to the PIA Profit Leaders, Printemps, obviously, has too much short-term debt. If accounts receivable are not being managed wisely, there will not be sufficient cash to promptly pay its short-term creditors.

Other current liabilities may include obligations under capitalized leases, payroll taxes due, employees' withholding taxes, sales tax collected, accrued expenses such as interest, business taxes, payroll and vacation payroll, income taxes payable and others.

One current liability that is often poorly handled by printing firms is the account "advance collections." The following example demonstrates how this account should be used.

A customer may ask for an advance billing and the printer records an Accounts Receivable and an Advance Billing account. If this situation still exists at the Balance Sheet date, the Advance Billing is reversed and neither the Accounts Receivable nor Advance Billing show on the Balance Sheet.

When the Advance Billing is paid, only the account "Advance Billing" is left, because the corresponding Receivable has been paid. In this case, it is necessary to reclassify the Advance Billing that has been paid as an Advance Collection.

Strange as it may sound, this Advance Billing situation occurs in many printing companies. Proper accounting for Advance Collections is important.

DEFERRED INCOME TAXES

Deferred income taxes arise from timing differences resulting from income and expense items reported for financial accounting and tax purposes in different time periods. For the majority of printing firms the principal such item is the use of accelerated depreciation for tax purposes.

LONG-TERM DEBT

Long-term debt is a major source of funds to finance assets for the printer. It includes debt which will be paid off some time in the future, but not in the current period. Most of the printer's long-term debt is in the form of bank loans, mortgages or leases; some large printers may issue bonds.

	Printemps	Profit Leaders	Difference
Long-Term Liabilities	26.86%	15.66%	11.20%

The above ratios show that just as plant and equipment ratios are a prominent part of the balance sheet, so is long-term debt.

Again, Printemps' ratios show that it has too much debt. Perhaps Printemps' management has not pursued better financing methods. Has management considered issuing additional capital stock to obtain funds? Will Printemps be able to meet its financial obligations when due?

Printers do have to be very careful in proportioning their debt. A typical conversation between a banker and a printer with a high debt ratio may go as follows:

Banker: "Don't come to us to finance Assets that should be funded from Shareholders' Equity. We are not shareholders and we are not going to cover your weak Equity position."

Printer: "What is this? You did in the past, and I have been taking all my Profits out of the business."

Banker: "Well, we are not doing it now and I doubt if we will ever get back to that. In fact, forget about future loans and get what you owe us paid up as soon as possible. We only want to lend our funds to companies with strong Equity positions.

Recommendations:

1. Hold your breath;
2. Maximize Profits;
3. Minimize Tax (LIFO/Accelerated Depreciation);
4. Maximize after Tax Retained Profits;
5. Build a strong Shareholders' Equity position.

EQUITY

The Equity of a company represents its ownership interest. Proprietor's Equity is the term used to denote ownership of an unincorporated business. Shareholders' Equity is used for a corporation because all corporations are required to issue common stock. The term Partner's Equity is used for a partnership. Because most printing firms are corporations, the term used in this discussion will be "Shareholders' Equity."

Shareholders' Equity may include the following accounts:

Common Stock
Preferred Stock
Additional Paid in Capital
Retained Earnings
Treasury Stock

CONTRIBUTED CAPITAL

The term "capital stock" is sometimes used to designate all of the issued stock of the corporation, both common and preferred. The capital stock value is computed by multiplying the par value (original face value) of each share by the number of shares issued. For example, if Printemps issued 2,500 shares of common stock and the par value is $10 a share, the total dollar value of common stock would be $25,000. (2,500 shares X $10 per share = $25,000.) Most printing firms issue common stock.

Stock does not necessarily have to be issued at par value. If shares are sold at a price larger than par, the additional funds received will be shown as "Additional Paid-In Capital" on the balance sheet.

Preferred stock is another type of security that a company may issue to generate funds. The issuance of preferred stock is optional and many companies issue no preferred stock.

RETAINED EARNINGS

Retained Earnings are the accumulated profits (and losses) of a company that have not been paid out to shareholders as dividends. The earnings are reinvested in the company in the form of assets (cash, marketable securities, inventories, property, plant or equipment, etc.).

DEBT/EQUITY STRUCTURE

Printemps' ratio of shareholders' equity to all debt and equity is 39.46%: It's total debt ratio is 60.54%. The profit leaders' ratios are reversed -- shareholders' equity percent is higher than the debt ratio.

	Printemps	Profit Leaders
Total Liabilities	60.54%	42.50%
Shareholders' Equity	39.46	57.50

It's difficult to pinpoint the perfect debt/equity structure of a printing company because of many factors -- the form of operations, the company's financial goals, the company's cost of capital, interest rates, etc.

However, by examining the printing industry trends below, profit leaders consistently have a larger percentage of equity than debt.

TOTAL EQUITY AS A % OF DEBT AND EQUITY

	PIA Ratio Studies*				
	1984	1983	1982	1981	1980
All Firms	39.32%	41.55%	42.18%	44.23%	43.63%
Profit Leaders	55.25	57.89	54.88	54.08	55.50

* These ratios are from all firms reporting.

BALANCE SHEET

ASSETS	PRINTEMPS DOLLARS	PRINTEMPS % OF TOTAL ASSETS	PIA HIGH PROFIT STANDARDS ($1,500,000-$5,000,000) % OF TOTAL ASSETS	DIFFERENCE MORE (LESS)
CURRENT ASSETS				
Cash	$ 111,900	7.46%	13.06%	(5.60)%
Receivables	494,300	32.95	28.35	4.60
Inventories	196,200	13.08	11.36	1.72
Other current assets	63,300	4.22	8.92	(4.70)
TOTAL CURRENT ASSETS	865,700	57.71	61.69	(3.98)
PROPERTY, PLANT AND EQUIPMENT				
Real estate	137,700	9.18	9.75	(0.57)
Less: Accumulated depreciation	45,000	3.00	2.94	0.06
	92,700	6.18	6.81	(0.63)
Machinery and equipment	961,800	64.12	56.29	7.83
Less: Accumulated depreciation	539,700	35.98	33.03	2.95
	422,100	28.14	23.26	4.88
Other fixed assets	124,500	8.30	7.29	1.01
Less: Accumulated depreciation	69,000	4.60	3.57	1.03
	55,500	3.70	3.72	(0.02)
NET PROPERTY, PLANT AND EQUIPMENT	570,300	38.02	33.79	4.23
OTHER ASSETS	64,000	4.27	4.52	(0.25)
TOTAL ASSETS	$1,500,000	100.00%	100.00%	-
LIABILITIES AND EQUITY				
CURRENT LIABILITIES				
Notes payable	$ 137,300	9.15%	4.35%	4.80%
Accounts payable	215,100	14.34	11.31	3.03
Other current liabilities	152,800	10.19	11.18	(0.99)
TOTAL CURRENT LIABILITIES	505,200	33.68	26.84	6.84
LONG-TERM LIABILITIES	402,900	26.86	15.66	11.20
TOTAL LIABILITIES	908,100	60.54	42.50	18.04
SHAREHOLDERS' AND PROPRIETORS' EQUITY	591,900	39.46	57.50	(18.04)
TOTAL LIABILITIES AND EQUITY	$1,500,000	100.00%	100.00%	-

INTERRELATED RATIOS OF THE BALANCE SHEET

We will now examine ratios that interrelate between both sides of the balance sheet and, when evaluated with other ratios, offer significant help to the printing manager. Some ratios will include factors from both the operating statement and the balance sheet. Instead of relying on isolated ratios, a basket of ratios viewed together will provide better information about the financial health of a company.

Four types of ratios will be used in further analysis of Printemps financial position.

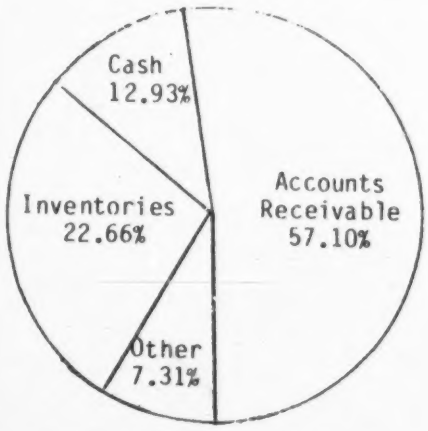
Type of Ratio	What It Does
1. Liquidity	Measures Printemps' capacity to meet short-term obligations.
2. Activity	Measures Printemps' effectiveness in using its assets.
3. Leverage	Measures Printemps' ability to meet short-term and long-term debt.
4. Profitability	Indicates Printemps' return on assets.

LIQUIDITY RATIOS OF WORKING CAPITAL

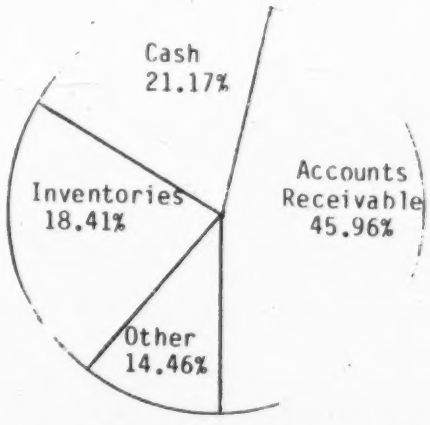
Working capital is composed of current assets as analyzed below. In financial analysis close attention is always paid to working capital. Adequate working capital is necessary for a company to meet current debts, carry sufficient inventories and take advantage of cash discounts.

WORKING CAPITAL
PERCENT OF CURRENT ASSETS

Printemps



Profit Leaders



Although the above chart ignores the absolute amounts involved, which are significant, Profit Leaders have proportionately more cash and less receivables and inventory.

The difference between current assets and current liabilities is called net working capital. Printemps net working capital in absolute dollars is $360,500.

Current Assets	$865,700
Current Liabilities	505,200
Difference - Net W rking Capital	$360,500

- Is $360,500 enough working capital for Printemps to operate smoothly?
- Is Printemps liquid enough or does the company have excess liquidity?
- Does Printemps have too little cash?

The following two ratios offer insight into the liquidity question.

CURRENT RATIO - The current ratio is a key part of determining the adequacy of working capital. It measures the company's ability to meet short-term obligations and is computed by dividing current assets by current liabilities.

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

Printemps	Profit Leaders
1.71	2.30

Printemps' ratio of 1.71 means that for every dollar of current liabilities, there is $1.71 in current assets. Profit leaders historically have had current ratios above 2. Generally, a ratio of 2.00 and above is assumed to be satisfactory. In the past many firms functioned well with a lower ratio. Today companies should have at least 2.00 because they are forced into longer conversion periods for inventories and longer collection periods for accounts receivable. Recently, the Profit Leaders' current ratio has been increasing.

Printemps' current ratio of 1.71 may indicate a cash shortage. There seems to be inadequate coverage for its short-term debtors, and Printemps' should improve its current position. On the other hand, a very high current ratio may indicate that the printer is not wisely using his funds. The assets may well be used more effectively elsewhere -- perhaps to expand operations by acquiring additional machinery and equipment.

Some say that doing business with other people's money, called "trading on equity" is good business. This is rarely true. If the current ratio is diminished by too much debt, the assets needed in the form of inventory, cash, etc., will not be available when needed. Also, if you are working with an excessive amount of other people's money, a demand for repayment in cash can prevent you from investing current assets profitably in your business. It can prevent you from buying and discounting, and can affect your credit from financial institutions which, in turn, can deny you the purchase of fixed assets. Using a maximum of other people's money may look good on paper, but by doing so, you may never get to where you want to go.

QUICK RATIO - A better liquidity ratio is the quick ratio, also called the acid test ratio. The only difference from the current ratio is the elimination of inventories from the numerator. Because inventories are the least liquid of the current assets, they are excluded. The formula for the quick ratio is:

$$\text{Quick Ratio} = \frac{\text{Current Assets Minus Inventory}}{\text{Current Liabilities}}$$

Printemps	Profit Leaders
1.33	1.88

Printemps again shows the same weak position reflected by the current ratio. (One should note that a declining quick ratio may be normal for a company purchasing additional machinery and equipment with cash.)

ACTIVITY RATIOS

As stated earlier, activity ratios indicate the effectiveness with which assets are used. Activity ratios discussed previously were the inventory turnover and the collection period of receivables.

LEVERAGE RATIOS

Leverage ratios reflect the company's total debt burden -- short and long term. The printing manager wants these ratios to compare favorably to industry ratios, particularly if his company is expanding and needs debt financing. Concern should be given to these ratios, also, because of the interest expense to the company. Leverage ratios also measure the relationship between shareholders' funds and borrowed funds.

Two debt to equity ratios printers should consider are analyzed below:

	Printemps	Profit Leaders (Printemps Sales Size)
1. $\frac{\text{Total Liabilities}}{\text{Equity}}$ =	1.53%	0.74%
2. $\frac{\text{Long-Term Liabilities}}{\text{Equity}}$ =	0.68%	0.27%

The first debt to equity ratio means that for every dollar ($1.00) in shareholders' equity, Printemps has $1.53 in liabilities. For every dollar, Profit Leaders only have $0.74 in liabilities. It's hard to say what the perfect

combination should be. Borrowed funds are riskier than ownership funds because of the payment of interest and the requirement for repayment. Dividends to shareholders are usually up to the discretion of the corporate directors and the invested capital does not have to be repaid.

The second leverage ratio measures the proportion of long-term debt to equity. Again, no one can say what the acceptable ratio is for a particular company. The printing industry ratio for all firms by sales size is 0.71 and for all profit leaders is 0.36. Generally, the ratio has been steadily rising for all firms, and has been slowly decreasing for the profit leaders. This trend seems to indicate that the profit leaders are becoming more financially secure and that printing managers should maximize shareholders' equity as a source of funds.

PROFITABILITY RATIOS

The majority of profitability ratios lie within the income statement. However, one major profitability ratio measures the effectiveness with which the company's investment (found in the balance sheet) has been utilized in order to produce that profit. This ratio is called the Return On Investment and is discussed in a later section.

MEANING OF SIGNIFICANT FACTS

Significant Facts in these ratios are often particularly important statistics and ratios for the printer. They are as meaningful as the financial statements, and often are the lowest common denominators which can be easily managed to produce higher profits.

INVESTMENT

The objective in this section is to present assets used per employee. From the information found in the significant facts section, you will note that High Profit companies generally invest more assets per employee. As sales volume increases, assets invested per employee also increase. Significant Facts related to investment are defined and explained below.

Assets per Employee -- All Employees = Assets (Net) / Number of All Employees = This ratio includes all assets -- current, fixed (net of depreciation), and others. It indicates the adequacy of the funds you employ.

Assets per Factory Employee = Assets (Net) / Number of Factory Employees = This ratio is similar to the one above, but shows assets per factory employee.

Average Net Worth per Employee = Shareholders' Equity / Number of All Employees = This figure tells what part of the first ratio (assets per employee) is funded by shareholders' investment.

Average Gross Plant Investment per Factory Employee = Plant Machinery and Equipment (Gross) / Number of Factory Employees = This is a "key fact." It is obvious that the trend is toward more equipment per factory employee.

Net Worth Percentage of Fixed Assets = Shareholders' Equity / Fixed Assets (Net) = This ratio indicates the relationship between funding fixed assets and shareholders' equity. Fixed assets should never be funded with current debt, but should be funded with long-term debt and shareholders' equity. This equity should also fund about 50 percent of all assets -- an indication of funding strength.

SALES

The category of sales provides information on sales per employee. These statistics are determined twice -- once including executives and then excluding them. Here, we will address statistics excluding executives. The following sales proportions are particularly noteworthy:

Sales per Employee	= Sales / Number of All Employees	=	This is an invaluable number. The only better ones are the two ratios below.
Sales per Factory Employee	= Sales / Number of Factory Employees	=	This is a refined number of sales produced per factory employee.
Sales Less Materials per Factory Employee	= Sales Less Materials / Number of Factory Employees	=	This ratio is the Value Added produced per factory employee -- one of the most important ratios in the Ratio Study. You must know this number and plan to improve it; the end result will be improved profit.

EMPLOYEE DISTRIBUTION

This category of Significant Facts presents the percentage distribution of employees by departments. For example, for all firms reporting in the PIA Ratio Study, the distribution is as follows:

Factory	74.57%
Administrative	14.10
Sales	11.33
	100.00%

The most important fact here is the percentage of factory employees. Although there may be a firm with too many factory employees and not enough administrative and selling employees, this would be a rare exception. You need factory employees to produce your product; their productivity gives you revenues.

Often, a very simple observation serves as an indicator of productivity; i.e. are there enough factory employees to produce the product required to support the overhead and provide a profit. This seems elementary; in many cases, it's a revelation. Note that the percentage of factory employees is about 75 percent for very small firms, and rises to 83 percent of all employees for very large firms. There is a specific characteristic for each sales class -- a very simple, but valid relationship.

SALES PER SALESPERSON

This ratio is computed as follows:

$$\frac{\text{Sales Produced by Salespersons}}{\text{Number of Salespersons}}$$

To use this fact properly, you must be very specific in taking into account your sales volume as well as your product and process specialties. In analyzing the significant facts section of the book All Printers By Sales Volume, note that sales per salesperson in a small firm are about $147,800 and that the figure rises to $1,738,000 for firms with sales over $10 million. This rise occurs throughout sales classes, and you must zero in on your sales class and relate your figures to the product and process specialties in the other PIA books in this series. Data for publications printing will be much different from that for commerical printing, and data from web-offset will be different from sheet-offset data.

PAYROLL

Payroll statistics are computed first by including fringe benefits and executive compensation, and then again by excluding these factors. Thus, there is a separate section within this category for executive payroll.

The first item in this category is total payroll as a percentage of sales. This includes factory, administrative and sales payroll, and is computed as follows:

$$\frac{\text{All Payroll Costs}}{\text{Sales}}$$

This ratio is affected by the size of a firm. Payroll as a percentage of sales forms a bell-shaped curve starting at about 40 percent in small firms, rising to 42%, then decreasing to 36 percent for very large firms.

The next ratio is factory payroll as a percentage of gross plant investment. It is computed as:

$$\frac{\text{Factory Payroll}}{\text{Machinery and Equipment (Gross)}}$$

In general, this ratio equals about $0.85 per year in payroll costs per dollar of gross plant investment. This is a very qualitative statistic and the absolute number requires further evaluation. Of course, more than an 0.85 percent ratio would be better if the company were fully equipped. In this case, there would be a maximum utilization of equipment. However, it is still possible to have over an 0.85 percent ratio as the result of inadequate plant facilities. In other words, the number doesn't tell the full story.

Payroll per employee. This category provides an absolute amount of payroll per employee and, more specifically, per factory, administrative, and sales employee. These numbers are presented for "All Firms" and "Profit Leaders" in each sales class.

Note that, in some cases, Profit Leaders pay less per employee. One must put aside the notion that higher profit has to do with lower payroll costs. We have already established that Profit Leaders have a lower relative payroll cost, but that this is related to a higher capital investment per employee and a greater Value Added per factory employee.

A separate subheading in this category addresses payroll per executive for all employees, and then again, payroll broken down more specifically per factory, administrative, and sales executive.

PROFIT

Gross profit percentage is computed as follows: first, determine your gross profit -- sales less the cost of goods manufactured. Then relate gross profit to sales.

$$\frac{\text{Gross Profit}}{\text{Sales}} = \text{Gross Profit as a Percentage of Sales}$$

	All Firms	
	All Firms	Profit Leaders
Gross Profit as a Percentage of Sales	23.42%	27.79%

Smaller firms require a higher gross profit percentage. In firms with up to about $5,000,000 in sales, the High Profit Standard is approximately 29 percent of gross profit. At that point, the gross profit required becomes less because of relatively lower administrative and selling expenses.

Too many printers are searching for a mystical formula to produce high profits. That formula need not be mystical because there really is a way to produce a higher gross profit. The difference in gross profits between "All Firms" and "Profit Leaders" approximates the difference in profit before taxes. Therefore, a source of higher profits is increasing gross profits. This directs us to:

- Pricing
- Material costing and control
- Increased Value Added per factory employee
- Expense control.

The average gross profit per factory employee is an excellent lowest common denominator with which to gauge your profit performance. It is computed as follows:

$$\frac{\text{Total Gross Profit}}{\text{Number of Factory Employees}} = \text{Average Gross Profit Per Factory Employee}$$

	All Firms	
	All Firms	Profit Leaders
Average Gross Profit per Factory Employee	$22,865	$28,209

Another interesting statistic is your average net profit before taxes per employee. For all firms, this figure is $2,906 as compared to $8,858 for profit leaders.

Income before taxes as a percentage of sales for all printing firms in the Ratio Study was 3.82 percent, compared with 11.90 percent for the profit leaders. The percentage for all firms is much too low; it returns a dismal 7.01 percent on investment. High profit firms realize 15.72 percent return on investment.

After your bills are paid, where do you put your excess cash? In a passbook savings account earning approximately 5-1/2% interest? Some people may consertively invest in U.S. Treasury bills which have recently averaged 9%. Nevertheless, you probably would not be satisfied with a 7% return on you investment (ROI). Yet, the average printing firm in 1983 averaged 7% on its ROI. Printing managers cannot settle for such a low return if they are to keep their company profitable.

Return on Investment refers to the capital used to produce income. Mathematically, it is:

$$\frac{\text{Income}}{\text{Assets}} = \text{Return on Investment (ROI)}$$

ROI - 1984 Ratios: All Firms - 7.01%; Profit Leaders - 15.72%

Return on Investment (ROI) is the most comprehensive measure of profitability because it incorporates the two major factors that should be considered in measuring profits: 1) income, and 2) investment. The only difference of opinion in this area is whether net assets or gross assets should be used to compute ROI.

ROI is a very simple computation, analogous to figuring simple interest, or, in introducing a time element involving alternate decisions and capital expenditures, or compound interest.

The ROI concept is gaining more and more acceptance as a measure of profitability in printing companies. This is due to the fact that printing is a capital intense industry and printing firms generally have high fixed assets against which their profit performance is measured.

The importance of ROI is evident from its history in the printing industry. Since ROI was introduced in the 1967 PIA Ratio Books, the Individual Computer Printout has been expanded to include ROI, an entire annual PIA financial meeting has been devoted to the concept, and PIA conducted a special historical case study on ROI. This study revealed a decline in investment turnover and showed the effect of this on the ROI rate when there is not a corresponding increase in profit as a percentage of sales.

PIA has remained a strong advocate of the ROI concept and consistently urges its adoption through continuing education.

DEFINING RETURN ON INVESTMENT

As stated above, ROI can be expressed simply as:

$$\frac{\text{Income}}{\text{Assets}} = \text{Return on Investment}$$

This ratio produces, as a percentage, an annual rate of return on assets used to produce income. It is the same as an annual interest rate that one would receive on a bond or other type of investment.

The simple ROI formula is a reduction of the following ratios:

$$\frac{\text{Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} = \text{ROI}$$

The first fraction is income as a percentage of sales. It is a hard number; therefore, if you want to improve your ROI, it is this percentage to which you must pay particular attention. We will discuss this further under the heading "Return-on-Investment Dilemma."

The second fraction is called "investment turnover" or "asset turnover." The term "investment" in this context refers to assets used to produce more earnings.

The "sales" in the denominator of the term "income as a percentage of sales" and the "sales" in the numerator of the term "investment turnover" can be cancelled. We have already done this in order to obtain the simple expression "Income over Assets." However, it is still best to think of these two fractions as dynamic elements in ROI management.

Here is an example of the ROI computation:

Sales	$1,000,000
Profit Before Taxes	120,000
Assets	500,000

$$\frac{\$\ 120{,}000 \text{ Income}}{\$1{,}000{,}000 \text{ Sales}} \times \frac{\$1{,}000{,}000 \text{ Sales}}{\$\ 500{,}000 \text{ Assets}} = \text{ROI}$$

$$12\% \times 2 = 24\% \text{ ROI}$$

In the PIA Ratios, income is...

...income before interest expense, other income and taxes.

Assets are...

...gross assets employed before deduction of accumulated depreciation and amortization.

As these are not necessarily commonly used definitions, we will discuss other concepts as well.

ALTERNATE CONCEPTS

Income Before Interest, Other Income and Taxes. Our terminology refers to income as income before interest, other income and taxes. Most published studies base Return on Investment on after-tax profit. The reasoning is that taxes are expenses, just like any other expenses.

Taxes: Computing Return on Investment before taxes provides a standard which everyone can easily use. The amount of tax is different for almost everyone since:

- The normal tax rate is different at different income levels.
- Investment credits, new-job tax credits and other credits can produce substantially different net taxes.
- This year's tax may be reduced by a net operating loss carryforward.
- Accelerated depreciation methods are used for tax purposes, and most (but not all) use straight-line depreciation for financial purposes.

The tax on profits may vary widely from situation to situation. Thus, if Return on Investment is to be of practical use, computing it on profit before taxes is the more valid standard.

Interest Expense, Non-Operating Income and Expense: By using profit before interest expense, we are able to compare the Return on Investment before an interest charge vs the cost of capital, which is an interest charge.

For example, if your return on investment is 25 percent and your cost of interest is 17 percent, it pays to borrow funds which will produce a greater return. By the same token, it would not pay to borrow funds at an interest rate greater than your ROI. You can see that, if interest were deducted from profit, it would not be valid to compare your return on investment with the cost of capital to determine whether a ROI decision is valid.

Non-operating income and expenses normally are excluded from our calculations. It is important that you remove non-operating assets from your investment figure as well.

DEPRECIATION

Since accumulated depreciation is not deducted from fixed assets in arriving at total investment or assets, there are some proponents of the theory that depreciation not be deducted from income for ROI purposes. This concept is not too strongly advocated.

Some printers, for financial or tax reasons, compute depreciation by accelerated depreciation methods. This produces higher depreciation in the early years of an asset's life than does the straight-line method. If accelerated depreciation is used, the excess depreciation should be added back to profit in order to compute your ROI.

VALUATION OF ASSETS

We can consider four different asset-valuation bases:

- Gross Assets at Book Value - Assets are at their original cost without deduction for accumulated depreciation.
- Net Book Value - Assets are valued at original cost less accumulated amortization and depreciation.
- Replacement Value - This is the same as Gross Assets, but adjusted for the increase in their replacement cost.

- Market or Actual Cash Value - Similar to Net Book Value, but asset costs have been changed to reflect replacement cost less the proportional accumulated depreciation.

All of these variations present ways of valuing fixed assets. Each approach has considerable merit. The Replacement Value and the Replacement Value less Accumulated Depreciation are approaches you may want to use on your own as they can be very meaningful depending on your circumstances and objectives. For internal management purposes use the most accurate value of your equipment that you can. In these PIA Ratio Studies, however, we are limited to determining ROI by Gross Assets at cost and Net Book Value.

NET ASSETS VS GROSS ASSETS

In comparing Return on Investment computed on Gross vs Net Assets, we find that each produces substantially different results. For a number of years, the PIA Ratio Study has been computing ROI based on Gross Assets. This is the so-called DuPont method, which has the advantage of alerting management to a decreasing Return on Investment and the need for equipment replacement.

Under the Net Asset method, a higher Return on Investment may justify continued investment in existing equipment mainly because of lower book value. The Gross Asset basis has its purpose, but is not as accurate as the Net Book Value.

The Return on Investment based on Net Assets is computed as follows:

$$\frac{\text{Income Before Taxes, Interest, and Other Income or Expense}}{\text{Assets Less Accumulated Depreciation}}$$

For "All Firms," this is 10.11 percent; for "Profit Leaders," 21.46 percent.

The net asset method may produce a more valid operational Return on Investment and a more accurate computation.

WHAT IS A FAIR ROI?

The "All Firms" ROI of 7.01 percent on gross assets and 10.11 percent on net assets is hardly adequate to justify investment. The "Profit Leaders" ROI is 15.72 percent on gross assets and 21.46 percent on net assets. The high-profit companies appear to achieve an ROI more commensurate with the economic risk.

The printing industry presents substantial risk and, therefore, the return related to that risk should be substantially higher than prevailing interest rates. Thus, your ROI should exceed 20 percent on a new-asset venture, or 30 percent on net assets.

RETURN ON INVESTMENT DILEMMA

Since ROI is computed by multiplying "income as a percentage of sales" by the "investment turnover," it would appear that we could increase our ROI by one or the other factor, or both. This is true, but first a little background is necessary. We will limit our statistics to the Profit Leaders.

The investment turnover for Profit Leaders in this year's Ratio Study is 131.54 percent. This means that these firms achieved $1.32 in sales for each $1.00 of assets employed. Let's look at the historical record of investment turnover.

This year	131.54%
1983	131.84
1982	141.56
1981	142.49
1980	141.42

Until 1983, the investment turnover has remained fairly steady. This has been true for all participants. At the same time, however, a specific printing company that acquires substantial new equipment is likely to show a decline in investment turnover. This is caused by the capital intensity of printing equipment. Therefore, to maintain a fair return on investment, profit as a percentage of sales has to be increased. This can best be explained with an example:

	Old	New
Equipment	$ 50,000	$200,000
Investment Turnover	200%	140%
Desired Return on Investment	20%	20%

Return on Investment = Investment Turnover x Profit as % of Sales.

				Profit Needed As A % Of Sales
ROI	= Sales / Assets	x	Income / Sales	
Old 20%	= $100,000 / $ 50,000	x	$ 10,000 / $100,000	(10%)
New 20%	= $280,000 / $200,000	x	$ 40,000 / $280,000	(14.3%)

To maintain the desired 20 percent Return on Investment, one would need a profit of 14.3 percent profit on sales with the new equipment, as opposed to a 10 percent profit on sales with the old equipment.

There are two traps to avoid in the area of Return on Investment:

1. When you increase the assets you employ, you must also increase your profit as a percentage of sales to maintain a fair return on investment. If you don't, you risk having a diminished Return on Investment.

2. Your new selling price with a higher profit mark-up may still be lower than your price using the old equipment. The new equipment should produce a lower unit selling price despite the higher cost rates and higher required margin. If this were not true, there would be no economic justification for replacing old (less capital intense) with new (more capital intense) equipment.

YOUR ULTIMATE GOAL: THINKING ROI

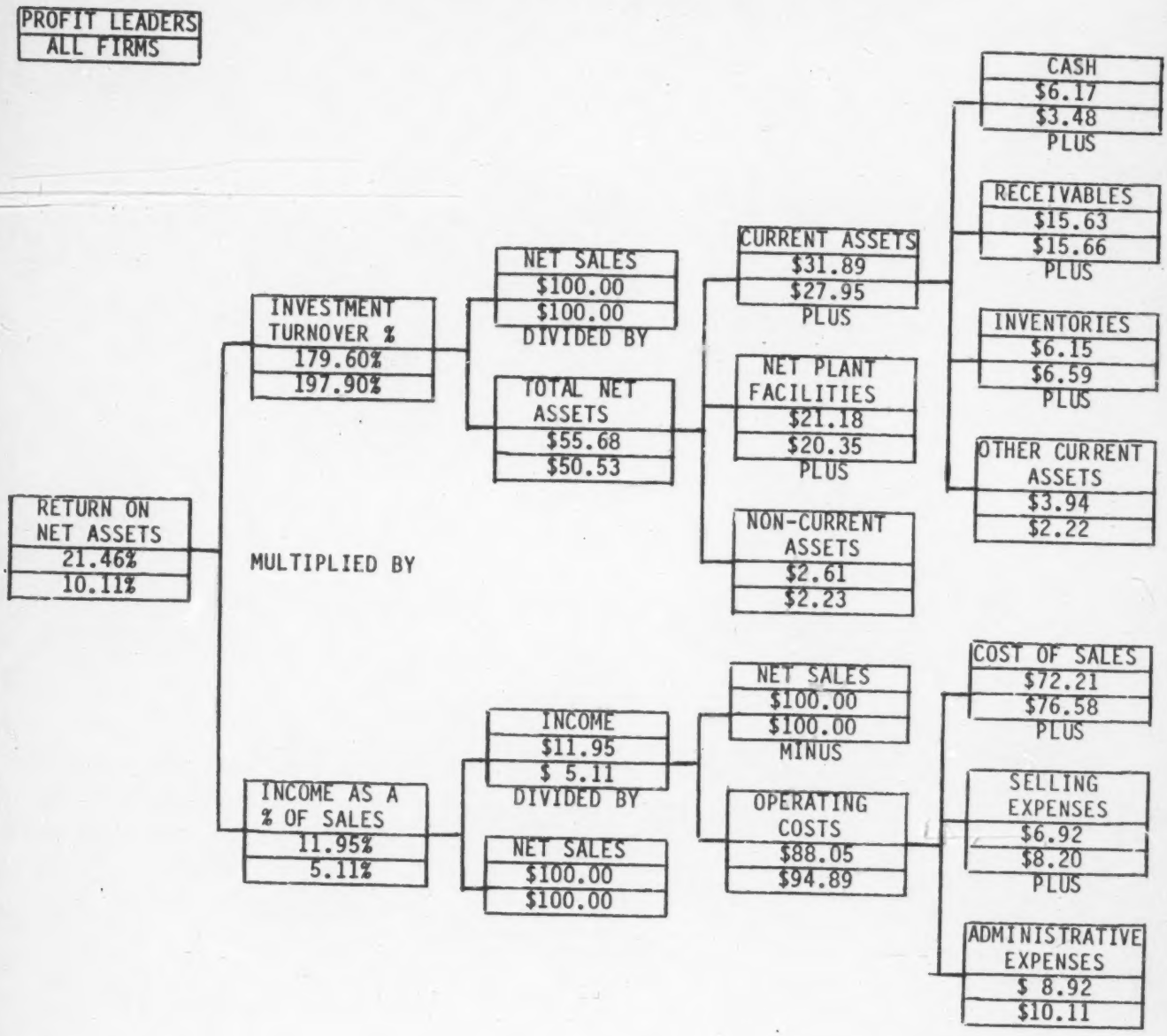
Thinking ROI is like working backwards. Thus, a competent printing manager might plan along these lines:

1. Capital to be employed		$400,000
2. Desired ROI: 20 percent of capital employed		80,000
3. Sales to be achieved from new assets employed: 140 percent		560,000
4. Required profit as a percentage of sales:	$\frac{\$\ 80,000}{\$560,000}$	= 14.3%

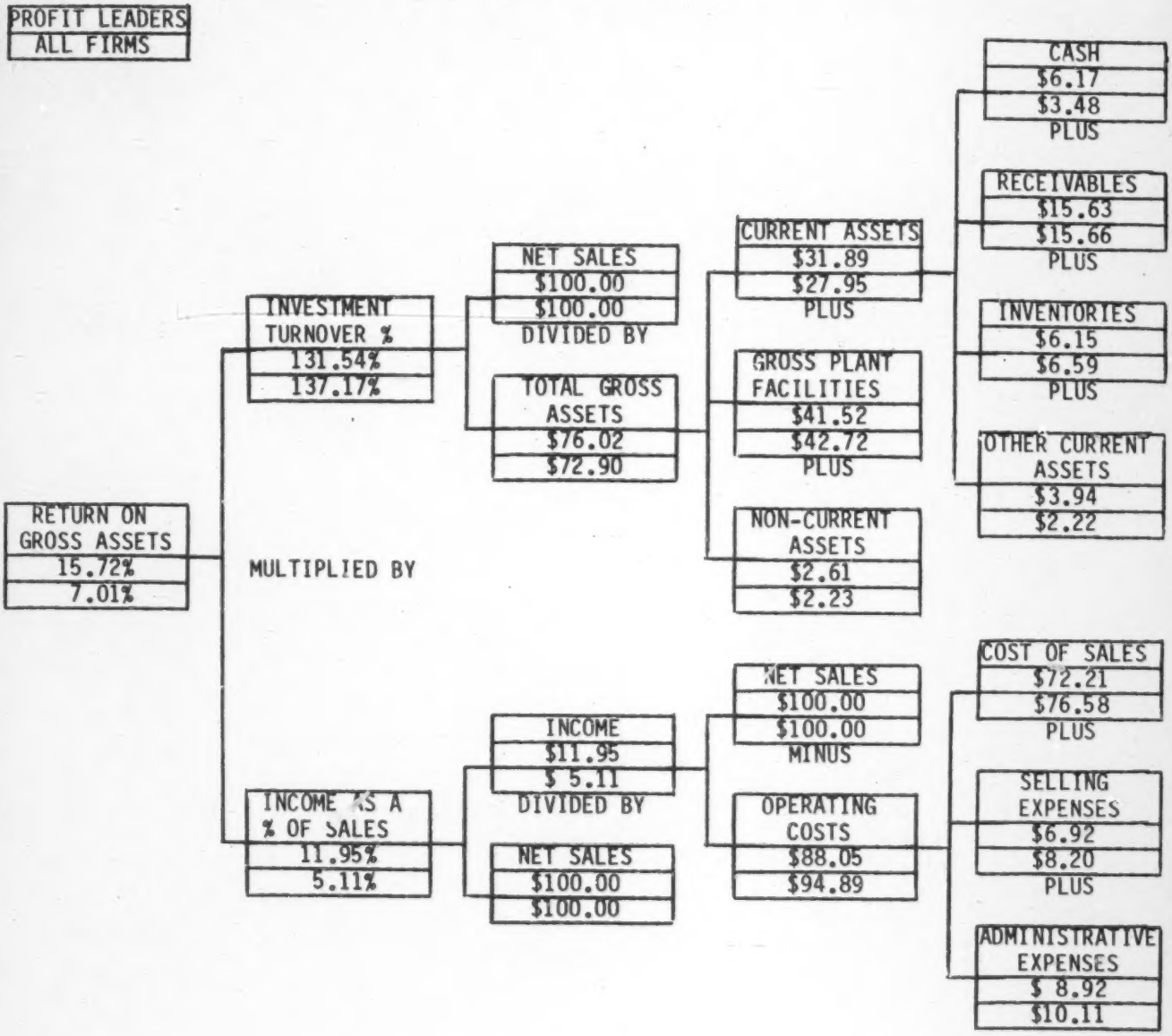
This example shows that you must strive for a 14.3 percent profit on sales to produce a 20 percent ROI on the capital you employ.

In conclusion, concentrate on profit as a percentage of sales. Moreover, don't let this profit percentage be trite. Let it vary with the intensity of assets employed. And remember, make every effort to maximize investment turnover. Think ROI -- and profit.

RETURN ON INVESTMENT CHART - BASE: $100 OF SALES
(NET ASSETS)



RETURN ON INVESTMENT CHART - BASE: $100 OF SALES
(GROSS ASSETS)

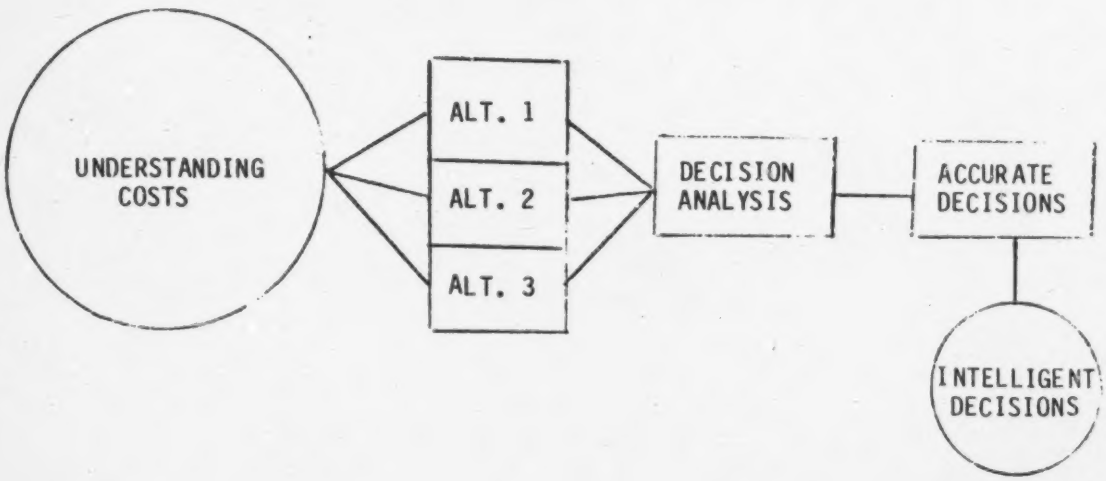


SECTION 3 - MEANINGFUL TOPICS RELATIVE TO THE GRAPHICS ARTS INDUSTRY

A BREAK-EVEN ANGLE TO COST/VOLUME/PROFIT

Cost and pricing decisions can "make or break" a printing manufacturer. The printer is constantly faced with decisions about selling prices, fixed costs and variable costs. These decisions can be made intelligently if the printer fully understands and utilizes pricing techniques and cost-volume-profit relationships. Of course, some factors the printer cannot control; competition and market pressures will impact pricing decisions. Likewise, although costs do not determine the sales price, they do have a great deal of influence on what that price will be. Understanding cost behavior outfits the printer to make reasonably accurate predictions insuring good pricing decisions and other financial management decisions.

What printing techniques are most profitable?
Are we charging enough?
Should we concentrate on web sales?
Are we getting "the most" out of our press?
Could we expand? Should we expand?



COST KNOWLEDGE

The printer equipped with good cost knowledge will be able to manage and control expenses more efficiently. The springboard to understanding cost behavior is break-even analysis. Throughout this discussion, keep in mind that printing is highly specialized and normally does not have "shelf items" to sell. Also, recognize that break-even analysis may be of more benefit to some printers than others, but that all will be able to utilize its basic cost concepts in making good financial decisions. A printer may use the analysis on a job-by-job basis to determine whether to accept or reject certain jobs. Similarly, the analysis may provide good approximations in answering other key questions.

BREAK-EVEN POINT

Narrowly defined, the break-even (B/E) point is the point at which sales and expenses are equal, or, in other words, profit is zero.

B/E POINT - - SALES - EXPENSES = $0

Do not misconstrue the term "break-even analysis". A printer certainly wants to do more than break even or he would not consider being in business. Breaking even is only the beginning of the basic principle underlying cost and pricing structure. Also, break-even analysis encompasses much more than breaking even. It can determine what volume of printing must be generated and sold for the printer to reach a desired level of income. It can determine which jobs are more profitable. Let us investigate.

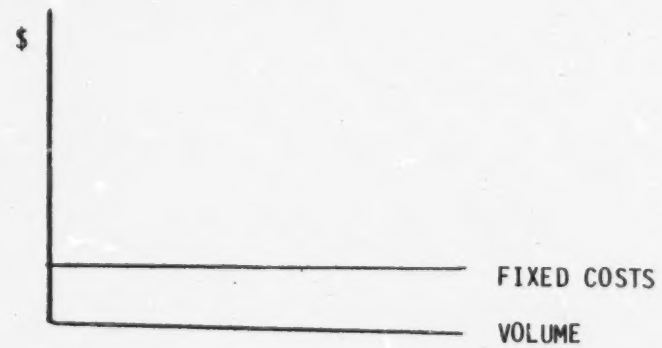
First, two terms must be considered -- sales and expenses. The term "sales" needs no explanation; the more the better. Fortunately, printing sales volume has been on an upward trend and is expected to continue so. Unfortunately, costs are also rising. This is the area we must effectively manage and understand in order to stay ahead.

COSTS

A printing manufacturer has numerous costs. Some of them will vary in direct proportion to the volume of printing produced. Others remain relatively fixed in amount over a period of time. Some expenses contain both variable and fixed elements. It is important for the printer to segregate these costs to understand the influence they have on profits

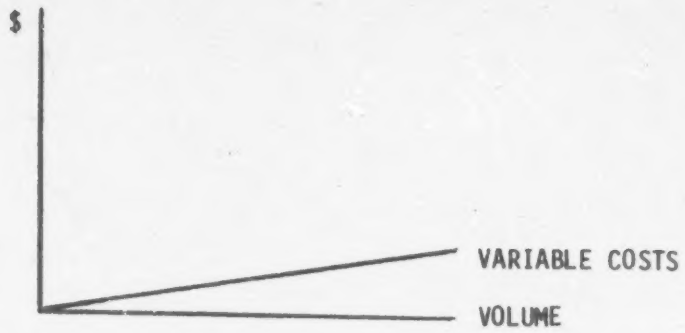
Fixed Costs

Fixed costs are expenses that remain the same regardless of the level of output over a period of time. Rent, depreciation, supervisiors' salaries and real estate taxes are a few examples. Factory expenses included in the PIA Ratio Study have their fixed elements segregated.(See PIA supporting Schedules in the Income Statements.)



Variable Costs

Paper, ink and direct wages are examples of a printer's variable costs. As the volume of printing rises, these costs will rise proportionately.



Mixed Costs

Caution. Recognize the fact that over a period of time some expenses cannot be compactly placed in the fixed or variable category. There are expenses that may vary with production at a certain point in time, but not in direct proportion. For example, one printing supervisor may be sufficient to oversee the work of the press department up to a certain point of production. However, if sales volume increases so that additional material and labor are necessary, a second supervisor may have to oversee the additional volume of printing.

Conversely, if the volume of printing decreases, but only temporarily, there may be no need to reduce production staff. Yet, if the decrease in volume is considered permanent, a supervisor may have to be terminated. Therefore, in the short run, supervisory salaries are considered fixed; in the long run, they prove to be variable.

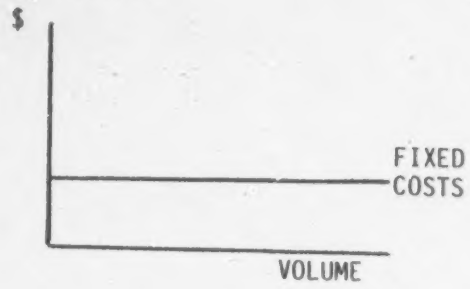
Consider printing equipment. One press may have an average production capacity of 12,000 impressions per hour and be efficient for a volume of 8,000 to 16,000 impressions per hour. The costs (mostly depreciation) would be considered fixed. However, if customers' printing demands increase to 24,000 impressions per hour, a larger press, or another press the same size, will be needed. Between 8,000 and 16,000 impressions, costs would be fixed, but outside that range, costs would be variable.

For this analysis, we will assume all costs can be classified as either fixed or variable. Normally, within a period of a year, one can accurately predict fixed and variable costs.

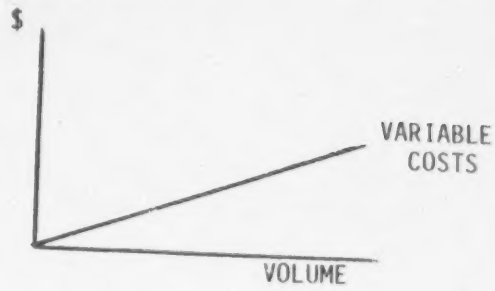
GRAPHING COSTS AND SALES

Combining fixed and variable costs on a graph together with the sales line emphasizes the break-even point. Graph number 4 below also shows that once the break-even point is reached (fixed costs are covered) in sales volume, additional sales produce profits.

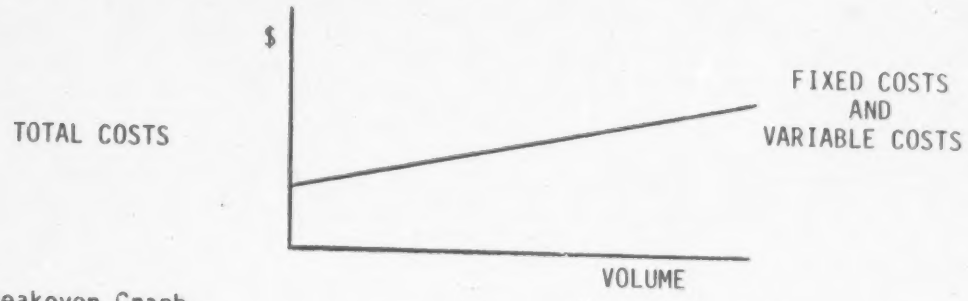
1. Fixed Costs



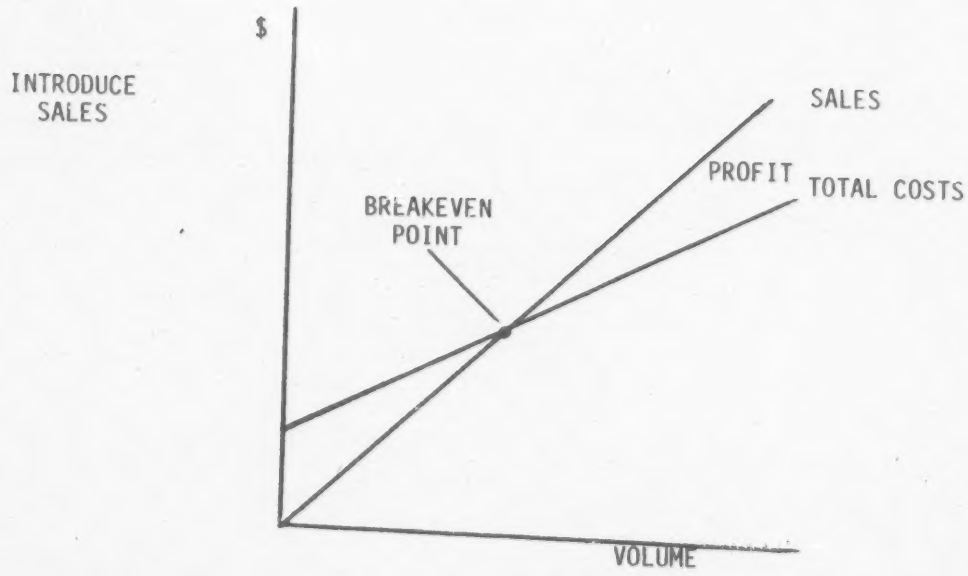
2. Variable Costs



3. Fixed and Variable Costs Combined



4. Breakeven Graph



The above graphs assume that volume is the only factor influencing cost. Remember, other factors also influence costs and sales.

BREAK-EVEN ANALYSIS

What volume of printing must be sold to break even? What volume of printing must be sold to reach a target level of income? In printing, volume may be based on units (or thousands of units) of production, impressions per hour, dollar volume of sales, or other measures. For our simple illustration below, we will assume volume is based on thousands of units of production.

> Printer Ken would like to know what volume of printing he needs to break even. He has segregated his fixed and variable costs for the preceding year and has estimated what they will probably be in the current year. He has found that his total fixed costs will be approximately $500,000. His average sales price on most of his printing jobs is $250 per thousand of units produced and his variable costs are $175 per thousand of units produced.

To find Ken's break-even point, he would use the break-even point equation and let X equal the number of thousand units needed to break even.

B/E Equation:

SALES = VARIABLE COSTS + FIXED COSTS
$250X = $175X + $500,000
X = 6,667 THOUSANDS OF UNITS

So, Printer Ken would need to sell 6,667 thousands of units (or 6,667,000 units) of printing to break even.

> Now, Printer Ken would like to know what volume of printing he needs to match the average PIA Profit Leader's income level. (Historically, PIA Profit Leaders achieve an average of 12 percent income before taxes as a percentage of sales.)

The equation he will now use is:

SALES = VARIABLE COSTS + FIXED COSTS + DESIRED INCOME
$250X = $175X + $500,000 + .12($250X)
X = 11,111 THOUSANDS OF UNITS

Therefore, if he sold 11,111,000 units, he should expect his income before income taxes to be 12 percent.

Keep in mind Printer Ken's break-even analysis was based on a particular set of assumptions. If his conditions change, a whole new set of cost-volume-profit relationships would appear.

OTHER APPLICATIONS OF BREAK EVEN ANALYSIS

Break even analysis may also be used to provide other helpful information, particularly in budgeting and forecasting. Printer Ken may be considering a new plant layout and expansion. Where he can follow through with this plan, his fixed and variable costs may change considerably. He could plot his various levels of production expected along with various expected changes in his fixed and variable costs and analyze results on different levels.

He may also use the break even approach on a job-by-job basis. Some jobs will be accepted for reasons other than profit. Yet, to predict exactly how much income a particular job is adding to profits, the break-even approach is highly enlightening.

THE INVENTORY DECISION -- LIFO VS. FIFO

Printers struggle to beat the battle of red ink and produce a profit. Over the past several years, however, inflation has seriously sliced away profits in most graphic arts firms. In addition, a hidden pirate has been gnawing away at after tax income: namely, the higher replacement costs of materials and supplies.

A printer claims a 12 percent profit on a $1,000 sale if expenses -- including materials, supplies, factory payroll and overhead as well as administrative and selling expenses and interest -- total $880. But is this printer really left with a 12 percent or $120 profit? In manufacturing his product, he used a large dollar volume of materials and supplies, and now he must replace them. However, the purchase price has risen. Where does the additional money come from? The obvious answer is that the inflated replacement cost must be pilfered from the $120 profit.

During healthy economic times, slightly higher replacement costs have little effect on profits. However, today's leap-frogging prices have risen so fast that their bite into profits has been significantly large.

What can you do? Certainly, you cannot control material and supply price increases. But you can fight back!

Proper inventory accounting methods for materials and supplies can save printers substantial tax dollars. These lowered taxes translate into money in the pocket with which you can stave off high replacement costs. And the more material and supply prices increase, the more tax dollars you save.

The two most common inventory methods in use today are FIFO (First-In, First-Out) and LIFO (Last-In, First-Out). Both methods are accounting tools to describe the flow of materials and supplies. They do not, though, have an effect on the actual placement of materials and supplies into manufacturing.

The majority of printers operate under FIFO inventory, which provides them with higher end of the year after tax profits on the books than does LIFO. Unfortunately, this is "fool's profit". LIFO, on the other hand, shows lower profits on the books, and consequently, results in lower taxes.

The FIFO system theorizes that a printer uses materials and supplies that were purchased a long time back -- when prices were lower. Recently purchased goods (bought with higher prices) are said to be the last to go into production and, therefore, are inventoried at a higher price. Since material and supply costs are deducted from sales (along with other costs of operating a business) in order to determine pretax profits, these low expenses will bounce your profits to a false higher level.

At first glance, the high profits may appear appealing. But remember, your corporate taxes are calculated on profits. In effect, what you're doing is reporting too high a profit to the IRS much in the same way as if you had understated your selling and administrative expenses.

Valuing inventory with the LIFO method means that, in theory, a printer places his most recently purchased materials and supplies into production first. Again, during inflationary times, the most recent purchases represent higher dollar figures than do earlier purchases.

These high valued cost factors result in a more realistic, lower profit. In turn, less taxes are levied and the printer is left with more money available to help offset his rising prices.

Remember, as a practical matter, FIFO and LIFO only represent the hypothetical flow of goods through your plant and, in reality, there is no difference in real pretax profits in the two inventory pricing methods. While reported profits are likely to vary significantly, your true profits (before taxes) are the same. In both methods, the exact same amount of pretax cash (income and expenses) flows in and out. The only difference is the total taxes levied. FIFO followers will pay more tax dollars than their LIFO counterparts.

Furthermore, as prices climb, the difference between FIFO and LIFO users' tax payments increases correspondingly. LIFO users will be left with the increased value of work in process (materials and supplies) untaxed. This untaxed increased value is usually sufficient to pay for inventory replacement. The FIFO taxpayer does not have this advantage.

The example shown on page 73 demonstrates exactly how significant the tax savings can be for a printing firm opting for LIFO over FIFO. In both cases, all reported income and expenses are exactly the same -- with the notable exceptions of materials and federal income taxes.

Using FIFO, the printing firm with $1 million in sales values its inventory on a first-bought, first-used basis. This means that the company is reporting that the materials it places into production were purchased back when prices were lower than they are today. The $350,000 figure entered for materials will not buy the same volume of materials in the current market.

Converting to LIFO inventory, the same company saves $9,200. The printing firm reports that the materials required to produce its $1 million in sales were valued at the current (most recently purchased) market price and not necessarily at the actual price paid for them. The LIFO method shows that $370,000 worth of materials were used, some $20,000 over what the same company reported under FIFO.

The $20,000 in materials drops income before taxes down by, naturally, $20,000. In effect, the figure shows that the LIFO system leads to lower ($9,200, in this example) taxes.

Assuming that the printer is going to replace all of his used materials, his actual costs will come much closer to the $370,000 figure shown in the LIFO approach than to the $350,000 in the FIFO entry. Under FIFO, the company will have to pluck $20,000 from its after tax profits and add it to its reported $350,000 materials used in order to replace the goods; this decreases the $84,000 to around $64,000, or $9,200 less than the $73,200 produced by the LIFO method.

This $9,200 is not merely an "on paper" savings. Rather it is a cash in the bank savings achieved by lower tax payments. If material costs (most recently purchased) had increased more than the $20,000 our example indicated, it's not hard to see how an even greater tax savings would have occurred. Graphic arts firms are foolish to continue to report high profits realized under the FIFO method and should take immediate steps to convert to the accurate pretax profits enjoyed by LIFO users.

Because LIFO generally represents a change in inventory planning for graphic arts executives, questions about the method naturally arise. The following exchange is a sampling of some of the most commonly asked questions.

Q. How does a printing firm switch from FIFO to LIFO?

A. All you have to do is file Form 970 with Internal Revenue Service explaining exactly what your inventory method entails. You don't have to receive permission; you just sit back and collect the tax benefits.

Q. Wouldn't you be less likely to receive a bank loan using LIFO instead of FIFO? After all, your profits are lower!

A. Bankers are aware of the difference FIFO and LIFO make in profits. They can easily adjust, either up or down, the reported profit figures from both methods.

Q. How far back can you go when valuing inventory under LIFO? 2 years? 10 years? 50 years?

A. In the year that your conversion takes place, you use the previous year's ending inventory as your beginning. Any increases in inventory would come in beginning of the year purchases. Then, at the end of the next year you go back to that base, which is now two years old, as your starting point. If both you and your business last another 50 years, in 2034 you start your inventory with the tier that came in January 1, 1984.

Q. Do we have to keep our inventory records at these LIFO values? What good is my paper inventory and work-in-process prices at the 1975 level?

A. If you keep your cost sheet at current hourly rates and your perpetual paper inventory at current prices, you can turn your FIFO inventory over to your accountant for conversion to LIFO using the index factors.

Q. If you're going to sell your business, wouldn't you lose money by not using the FIFO system? Under LIFO, your profit is lower and the inventory on the balance sheet is lower.

A. First of all, you should operate your business as efficiently as possible -- not merely to report "fool's profits." But, if you do want to sell, you explain to your buyer how your inventory method works. Then, you sell your inventory at the currrent replacement cost and not at your LIF value.

Q. Can I price all inventories by the LIFO method including work-in-process, paper, other chargeable materials (ink, film, plates and others), and non-chargeable supplies?

A. Yes. You are talking about big dollars and in a growing firm this amount keeps increasing. The LIFO inventory reserve gets bigger and the tax saving accumulation becomes more substantial.

FIFO VS. LIFO: COMPARISON OF PROFIT AND TAXES

	FIFO METHOD	LIFO METHOD
SALES	$1,000,000	$1,000,000
FACTORY COST OF PRODUCT MATERIAL*	350,000	370,000
FACTORY PAYROLL	260,000	260,000
FACTORY EXPENSES	106,000	106,000
	716,000	736,000
GROSS PROFIT	284,000	264,000
ADMINISTRATIVE AND SELLING EXPENSES	160,000	160,000
	124,000	104,000
INTEREST	10,000	10,000
OTHER INCOME	114,000	94,000
	6,000	6,000
INCOME BEFORE TAXES	120,000	100,000
FEDERAL INCOME TAXES	34,950	25,750
AFTER TAX PROFIT	$ 85,050	$ 74,250

* COST OF MATERIAL USED

INVENTORY - JANUARY 1	$ 150,000	$ 150,000
PURCHASES	360,000	360,000
	510,000	510,000
	(320,000 lbs. @ $.50)	(320,000 lbs. @ $.4375)
INVENTORY - DECEMBER 31	160,000	140,000
COST OF MATERIAL USED	$ 350,000	$ 370,000

Using the FIFO method, this printing firm valued its cost of paper at the most recent purchase price, $.50 per pound. Under LIFO, the same firm valued its paper at the earliest purchase price, $.4375 per pound. The FIFO system generates a "fool's profit" of $10,800 over the LIFO technique, while the LIFO inventorying method saves $9,200 in taxes.

EFFECT OF GROWTH ON THE BALANCE SHEET

The balance sheet shows the financial structure in which a printing company is contained. Thus, there is a limit to the growth it will sustain. Assume the purchase of a $500,000 press. As a result:

- Cash will be reduced by a down payment of, say, $75,000.
- Fixed assets will increase by $500,000.
- Current liabilities will increase to the extent of the related note payable that matures in the next 12 months.
- Long-term liabilities will increase by the amount of the remainder of the note payable for the purchase of the equipment.
- If we assume a 140 percent relationship of sales to fixed asset investment, we can anticipate an increase of $700,000 in sales.
- These new sales will require about $50,000 in inventory, which includes raw materials and work in process.
- As there will be a 60-day collection period, you will have approximately $117,000 in accounts receivable.

Looking at a pro forma balance sheet the changes are:

Cash	-	$ 75,000
Accounts Receivable	+	117,000
Inventory	+	50,000
Machinery	+	500,000
Current Note Payable	+	95,000
Long-Term Note Payable	+	330,000

Any changes to produce growth, must be related to your balance sheet. A great deal of forethought must be given to determine whether the balance sheet can house that growth adequately. To think about it after the fact is too late.

As this article is written, the Tax Reform Act of 1984 was passed by Congress June 27, 1984 and is waiting the President's expected signature to become law. The Act is a gigantic piece of legislation designed to raise revenue to aid in reducing the national debt.

The new law touches the whole Internal Revenue Code with significant tax changes and new, complex laws. In a nutshell, taxes have been raised and tax-motivated transactions have been dampened. Almost everyone will be affected. Interspersed within the law are a few tax breaks. Hundreds of detailed provisions are involved; some are still being written. The following outline highlights some of the significant changes affecting corporations and businesses.

LUXURY AUTOMOBILES

Previously, businesses could deduct the cost of a car over a period of three years and receive an investment credit of six percent of the cost. Effective for cars placed in service after June 18, 1984, no more than $16,000 of the cost can be depreciated the first three years and the excess is to be written off at $6,000 per year. The maximum investment credit allowed is $1,000.

Example: Printemps Corporation purchases an automobile on September 1, 1984 costing $25,000 used exclusively for business and wants to claim full investment credit:

	NEW LAW	OLD LAW
Cost:	$ 25,000	$ 25,000
Investment Credit	1,000	1,500
Basis (reduced by one half of investment credit)	24,500	24,250
Cost Recovery (depreciation)		
First year	$ 4,000	$ 6,063
Second year	6,000	9,215
Third year	6,000	8,972
*Fourth year	6,000	
*Fifth year	2,500	
	$ 24,500	$ 24,250
Tax consequences		
Investment credit	$ 1,000	$ 1,500
Depreciation (46% tax rate)	11,270	11,155
	$ 12,270	$ 12,655

($385 less tax savings under new law)

* Only if automobile is still in service. In most cases the car has been replaced and the fourth year depreciation would not apply.

LUXURY AUTOMOBILES (Continued)

A. Not only has $385 in tax savings gone down the drain, but previous tax savings have been delayed. Considering the time value of dollars, the real tax benefits have been severely dampened.

B. The above example ignores the fact that the investment credit and depreciation deductions will be adjusted annually for inflation.

C. If the luxury automobile purchased was diesel-fueled, the basis of the auto would have been reduced by any amount received as an advance repayment of the increased diesel fuel tax. (Another provision of the new law raises the tax on diesel fuel from nine cents to fifteen cents per gallon effective August 1, 1984. To offset the increased tax, an advance repayment is provided.)

LEASED AUTOMOBILES

For leases of thirty days or more, the lessee cannot deduct certain percentages (tables to be issued) of his lease payments that would be equivalent to the investment credit and depreciation restrictions mentioned above. (The lessor is not affected by the investment credit and depreciation limits.)

BINDING CONTRACT

If an automobile is placed in service after June 18, 1984, but was acquired pursuant to a binding contract before June 18, 1984, the above car rules do not apply.

EXPENSING DEPRECIABLE PROPERTY INCREASES DELAYED

Scheduled increases in electing to expense certain amounts of costs of depreciable property instead of recovering it through ACRS have been postponed as follows:

	EXPENSE ALLOWED PER YEAR	
	OLD LAW	NEW ACT
1984	$ 7,500	$ 5,000
1985	7,500	5,000
1986	10,000	5,000
1987	10,000	5,000
1988	10,000	7,500
1989	10,000	7,500
THEREAFTER	10,000	10,000

USED PROPERTY INVESTMENT CREDITS

The maximum amount of used equipment presently eligible for the investment tax credit was to increase from $125,000 to $150,000 in 1985. The Reform Act freezes the amount at $125,000 through 1987; the amount will then increase to $150,000 for 1988 and thereafter.

Therefore, a printer purchasing $150,000 in used equipment in 1985 would have received a credit of $15,000 in 1985 ($150,000 x 10%). He receives only $12,500 in 1985 as a result of the new law ($125,000 x 10%).

LARGE CORPORATIONS TAX RATES

Large corporations with taxable income in excess of $1,000,000 will be taxed an additional 5%, not to exceed $20,250 for taxable years beginning after December 31, 1983.

TAX PREFERENCE ITEMS

Corporate tax preference items have been cut back an additional 5%, from 15 to 20 percent.

DEPRECIATION/INVESTMENT TAX CREDITS (BUSINESS PERSONAL PROPERTY PLACED IN SERVICE AFTER JUNE 18, 1984.)

- Passenger automobiles (or other property used as transportation)
- Computers (not used exclusively at place of business)
- Property used for recreation or entertainment
- Other property to be specified by IRS regulations

If any of the above listed property is used for business 50 percent of the time or less, NO invesment credit is allowed and depreciation used for the business portion MUST be straight-line as follows:

	STRAIGHT-LINE PERIOD
Three year property	5 years
Five year property	12 years
Ten year property	25 years

For example:
An employee of Printemps Corporation bought a home computer system which cost $10,000 in July 1984 to be used for business purposes. He discovered at the end of the year that only 45 percent of the computer use was for business. The tax consequences on his personal income tax return are as follows:

	NEW LAW	OLD LAW
Investment credit	$ -0-	$ 450 (45% x $10,000 x10%)
ACRS depreciation on business Portion		
Method	Straight-line	Rapid
Years to write off	Twelve years	Five years

DEPRECIATION - REAL ESTATE

New or used real property, other than low income housing, placed in service after March 15, 1984, is to be depreciated over not less than eighteen years under tables to be prescribed by the Treasury. The original ACRS law was fifteen years.

The taxpayer may elect straight-line ACRS allowances over a period of eighteen, thirty-five and forty-five years. If the ACRS prescribed tables are used, the excess depreciation on eighteen year real property over straight-line depreciation is a tax preference item.

TARGETED JOBS CREDIT

The targeted jobs credit has been extended from December 31, 1984 to December 31, 1985. A printing company could benefit $4,500 in credits over a period of two years if employees are hired within the targeted groups on or before December 31, 1985.

COST OF LIVING ADJUSTMENTS IN PENSION PLAN LIMITATIONS

Cost of living adjustments on dollar limits on contributions and benefits under qualified plans, tax sheltered annuities and SEPS have been postponed until 1988.

HOLDING PERIOD FOR STOCK DIVIDENDS RECEIVED

The act increases the holding period from sixteen to forty-six days for stock dividend received deductions.

RECORDS/LOGS TO BE KEPT

Beginning in 1985, record keeping is a must. Taxpayers are required to maintain adequate "contemporaneous" records to uphold the following expenses:

- Travel expenses
- Entertainment expenses
- Business gifts
- Depreciation or investment tax credits claimed for:
  - Computers
  - Automobiles or other transportation vehicles
  - Property used for entertainment or recreation
  - Other property to be specified

The records must accurately substantiate the business uses and purposes of the deductions or no credit or deduction is allowed. If taxes are underpaid due to unsupported "contemporaneous" records, the taxpayer is subject to the negligence penalty and possibly the fraud penalty.

THE VALUE OF TAX PLANNING

Tax planning. What is it? What purpose does it serve? How is it done? And, who should do it? These are all questions that business people should be able to answer comfortably. Surprisingly, however, while most business people do, indeed, know the answers, very few of them make any real conscious effort to put tax planning into their decision making process.

Tax planning is the evaluation of the tax effect of a transaction. As such, it is a highly important aspect of deciding whether or not a transaction should be accomplished. The following example illustrates what can happen when tax planning fails to enter into the decision making process.

> A company's management decided to trade in an automobile that it had purchased 2 years 10 months ago for $15,000. When the company's independent accountant conducted the monthly review of the company's books, he asked the controller why they traded the car when they did. The controller replied, "The President wanted a new car" and then asked the accountant why he wanted to know. The accountant explained that by not waiting an additional two months, the company will have to pay an additional $300 in federal income taxes because of an investment tax credit recapture on the auto that was traded in.

The question, of course, is "Why did this happen?". Obviously the company did not take the tax effect of the transaction into consideration when purchasing the new car. It did not use proper tax planning. If the company's management had either understood the tax effect of their decision or called their accountant to explain it to them, chances are they would have made a wiser decision. Delaying the transaction for two months was all that was needed to save the $300 in taxes.

While the foregoing may be a simplistic example involving a relatively small amount of money, small items tend to turn very quickly into large dollars having a substantial impact on a company's net income. Imagine the impact of selling or trading a printing press before the investment tax credit is fully realized. Given the purchase price of a press, it is easy to see how the dollar impact of an improper decision could range into the thousands of dollars if the tax effect is not considered.

Thus we can readily understand the importance of tax planning. Tax planning keeps more of the money generated in a transaction in company coffers. One should never lose sight of the fact that while taxes must be paid, there is nothing to prevent anyone from minimizing those taxes to the fullest extent allowed by law. Minimizing taxes, however, takes proper tax planning.

Almost every business decision has tax consequences, but managers seldom take these consequences into account. Generally, the reason is that the people involved simply do not understand tax implications and so, have little knowledge of how to reduce their tax on a given transaction. Also, many decisions are made hurriedly, with next to no thought given to what may happen at the end of the year. The latter is probably the cause of many more high tax bills than is managers' lack of understanding. The "how-to" of tax planning is relatively easy, although complex tax laws can make it a time consuming process.

The initial step in tax planning always involves obtaining all of the necessary information on the transaction in question. The transaction may be setting up a new business (deciding what type of entity it should be), the acquisition of new equipment (whether to lease or purchase new or used equipment), the purchase of real estate, or the disposition of marketable securities. These are only a few of the decisions which must be made and each can be handled in different ways to produce different tax results.

Once all the information is gathered, the next step is to examine the effects of various ways of structuring the transaction. Some alternatives, such as the example of trading in an automobile, are easy to evaluate; others may take more time and a great deal of study. Consider, for example, evaluating how to structure a merger or acquisition. This is a highly complex area that demands professional help. One mistake could mean paying a large sum of money in taxes that would otherwise not have to be paid. In careful tax planning, it is necessary that all of the possibilities be researched. A number of resources are available for this research. Among the most important is the Internal Revenue Code. The code, however, is really only a starting point for further research. Because it is so complex, interpretations of code provisions and the effect of the interaction between code sections on a situation is often better understood by going to other sources. It may also be necessary to study the legal history of a particular situation to determine how the courts view certain Internal Revenue Code provisions. All of these factors may enter into the final structuring of a decision. Because of other factors such as economics or timing, the end result may still not yield the lowest tax liability. However, by evaluating the tax effect, most companies will pay a considerably smaller tax than they would have if they had done no tax planning at all.

It should be noted that tax planning involves more than just immediate or short term results. The large volume of tax legislation passed in recent years have contained a number of provisions that effect the long range tax liability of certain transactions particularly in the area of depreciation of real estate. Anyone contemplating a transaction that involves real estate should seek professional advice.

In summary, tax planning should be a vital and integral step in the decision making process. To minimize tax liabilities, it is absolutely essential.

ON THE ROAD TO RECOVERY - STRATEGIES FOR BETTER COSTING AND PRICING

Economic conditions have forced business managers to seize tighter control of their costing and pricing strategies. Even though recent industrial trends show large printers relatively unaffected by recessionary pressures, the majority of medium to small size printing firms have not been as fortunate. These firms have been ravaged by both inflationary and recessionary elements. We are told that the economy is now on an upturn. If this is, indeed, true then the time is right for printing managers to take hold of this situation by employing updated costing and pricing strategies.

REPLACEMENT COSTS

The average printer is spending approximately 37 percent of sales on material. Needless to say, printers cannot use yesterday's costs to determine today's pricing. Yet, while this simple statement may sound obvious, the fact remains that the majority of printers do calculate prices based on outdated costs.

With costs continuously changing, printers must be ready, at all times, to update their costing and pricing systems. Furthermore, to price jobs profitably they must be able to anticipate what those cost increases will be. Herein lies the problem. With material and supply costs climbing at a fast pace, determining exact figures for these costing components proves difficult. The NIFO (Next-In, First-Out) method for material costing insures that a printing firm's costs for a job will be reported so as to allow for adequate funds to replace the goods used to produce the work.

Using the NIFO method, if you were to cost a job which required paper purchased at 43 cents per pound; film at $1 per sheet; and plates at $5, you would look ahead to what the replacement cost of these materials will be before you cost and price the work. If today's prices indicate that paper has jumped to 48 cents; film to $1.50; and plates to $5.50, then these are the figures you would use to calculate both your costs and your final price.

Pricing and Costing Utilizing Replacement Values

Original Purchase Price	Current Price To Replace
Paper @ $0.43/lb.	$0.48
Film @ $1.00	$1.50
Plates @ $5.00	$5.50

According to NIFO, you cost and price at:

Paper	Film	Plates
$0.48	$1.50	$5.50

Remember, the purpose of your cost and accounting system is to give you a clear picture of the ongoing financial operations of your business. The more accurate this picture is, the more intelligently you can price your printed product. Any system that does not provide for the replacement of materials and supplies will dig directly into your profits on the job.

UPDATED HOURLY COST RATES

Another factor with tremendous impact on costing and pricing is hourly cost rates. These production cost calculations must be scrutinized at increasingly close intervals as your costs of doing business climb.

Since the foundation of budgeted hourly rates is an analysis of current operating expenses and anticipation of increased expenses, profitable and competitive rates need to be continuously updated to compensate for present economic woes. The old theory of determining hourly costs once a year can be thrown out the window. Under today's inflation rate, your hourly rates should be calculated on a quarterly basis in order to reflect true operating costs.

INCREASED PRODUCTIVITY

Although increasing costs are a fact of life for today's printers, correspondingly increasing prices are not. The prime weapon graphic arts firms have to battle inflation with is productivity. Printers should take a close look at how improving productivity will lower the cost per unit and thus offset the devastating effects of inflation. Innovations are available in both management and technology that can give a big boost to productivity. Printers who do not keep pace with these innovations may well find higher costs driving them out of competition.

If your cost per hour of production is, say, $40 and you produce 5,000 units per hour, then your costs are $8 for each 1,000 units. Operating under 13 percent inflation for a period of three years, these same 5,000 units would cost $57.72 per hour, and total $11.54 per 1,000 units. (See illustration below.) This $3.54 per thousand increase may dump a printer out of the competitive market.

Assuming cost per hour cannot be changed, a graphic arts firm may well be stuck with the higher $57.72 cost per hour figure. But units produced can be improved. It is a rare (or not truthful) printer who can honestly say he cannot increase units produced per hour. In our example, a 2,215 boost in units produced each hour would lower the cost per unit back to the original $8 per thousand. Even though this entire increase may be unachievable, it is remarkable how much productivity can be increased if you set your goal and keep to it.

Increased Productivity Keeps Cost Per Unit Down

	Cost Per Hour ($'s)	Units Produced (Per Hour)	Cost Per Unit ($'s/M)
Base	40.00	5,000	8.00
13% Increase Per Year for Three Years	57.72	5,000	11.54
Objective to INCREASE Units Produced	57.72	7,215	8.00

To implement this increase in units produced per hour may involve the purchase of new technology, a production improvement program, or merely an investment in higher quality materials. But often the increase can be instituted without any added capital at all.

Printers today must be ready to investigate all and any avenues that might lead to increased productivity. By doing so, they will be better prepared to offset the potentially crippling effects of inflation. Tighter controls must be maintained in all aspects of the business. Accounting systems must insure that all costs are reported and that costs and prices are geared to the continuation of healthy operations. Then, printing firms should be on the road to recovery.

HOW DO YOU COMPARE IN NORTH AMERICA?

The Individual Company Computer Printout is a fundamental part of the PIA Financial Ratio Study. It is a detailed, well-organized presentation of key financial information that encompasses every facet of your printing business. It contains data specific to your company that are not available in the published volumes of the study. The Individual Company Computer Printout, designed with you, the busy printing executive in mind, is a concise presentation of:

- Your firm's operating statement;
- Your firm's balance sheet;
- Supporting schedules for your firm's income statement and balance sheet; and
- Your firm's Return on Investment.

In addition:

- Your firm's financial data are expressed in dollars and ratio form;
- The ratios of your printing firm are compared side by side with the ratios of all other ratio study participants and "profit leaders," based on both sales revenue and value added. Ratios of survey participants and "profit leaders" that produce the same products and use the same manufacturing process are also presented for your immediate comparison;
- Using the same presentation format described in the previous item, the ratios of your printing firm are also compared side by side with the ratios of all survey participants and "profit leaders" that are approximately the same size in terms of sales; and
- Finally, "significant facts" statistics are presented to help you gauge where your company stands relative to industry "profit leaders" and the U.S. and Canadian printing industries as a whole.

Because of the detail that the Individual Company Computer Printout contains, it can quickly help you identify those areas and operations of your business that are running efficiently and those that are not. You'll be able to ascertain the seriousness of problems and how much corrective action is necessary. The bottom line is that you can purchase all of these data for a small fraction of what you would have to pay if you generated a similar analysis from scratch.

If you are part of the 1984 database, and have not already done so, I urge you to make the investment. If you are not part of the database, please consider participating in the 1985 PIA Financial Ratio Study and availing yourself of this particular service.

William A. Rose, II
Director
PIA Financial Services